SUMMARY REPORT
ATOFINA EMERGENCY RESPONSE
RIVERVIEW, WAYNE COUNTY, MICHIGAN

Prepared for

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V Emergency Response Branch
9311 Groh Road
Grosse Ile, MI 48138

Prepared by

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23 July 2002

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SECTION 1
EXECUTIVE SUMMARY

The Roy F. Weston, Inc. (WESTON$_{®}$) and Tetra Tech EM, Inc. (Tetra Tech) Superfund Technical Assessment and Response Teams (START) have prepared this summary report in accordance with the requirements of Technical Direction Document (TDD) No. 0170-008, which the United States Environmental Protection Agency (U.S. EPA) Region V assigned to START. The scope of the TDD included emergency response activities in the vicinity of the Atofina Chemical, Inc. (ATOFINA) Plant in Riverview, Wayne County, Michigan. A chemical fire and explosion at the ATOFINA Plant on 14 July 2001 resulted in the death of three ATOFINA workers and the temporary evacuation of approximately 2,500 residents from four surrounding communities. START was tasked to conduct air monitoring in the evacuation area; to document on-site and off-site activities with written log book notes and photographs; to collect water samples from the Trenton Channel of the Detroit River; to arrange for the analysis of the samples collected; and to prepare this summary report.

Section 2.0 of this report provides background information of the incident at the ATOFINA Plant. Section 3.0 details the emergency response activities START conducted. Appendix A contains related air monitoring data tables, and Appendix B contains corresponding figures. Appendix C contains the data validation memorandum, laboratory analytical reports, and a copy of the chain of custody for the water samples START collected. A list of references used for this report is provided in Appendix D. The table on the following page provides information that correlates the tables and figures for this report.

SUMMARY TABLE FOR CORRESPONDING FIGURES AND TABLES

Air Monitoring Data Tables (Appendix A)	Date	Time	Corresponding Figure (Appendix B)
Table 1 - Air Monitoring • Round 1 • Round 2 • Round 3	14 July 2001	 1330 - 1602 1610 - 1935 2223 - 0005	 1 2 3
Table 2 - Air Monitoring • Round 4	15 July 2001	0925 - 1240	4
Table 3 - Air Monitoring • Round 5 • Round 6	16 July 2001	0830 - 1200 1645 - 1810	5 6
Table 4 - Residential Air Monitoring • Round 7	16 July 2001	1900 - 2015	Not Applicable
Table 5 - Air Monitoring • Round 8	17 July 2001	0905 - 1120	7
Table 6 - Geographic Positioning System Readings	17 July 2001 & 18 July 2001	1245 - 1450 1323 - 1447	Not Applicable

SECTION 2

BACKGROUND

Location of ATOFINA Plant (Explosion Site) *The Detroit News*

The ATOFINA Plant rail tank car fire and explosion occurred on Saturday, 14 July 2001 at the ATOFINA Plant, located on the southwest corner of West Jefferson Ave. and Pennsylvania Rd. in Riverview, Wayne County, Michigan. Vacant industrial, residential, and railroad (RR) properties surround the site. The Trenton Channel of the Detroit River is located 0.25 miles east of the Plant. ATOFINA is owned by TotalFina Elf, which is headquartered in Paris, France. The Riverview ATOFINA Plant has been in operation since 1898 and produces alkylamines; alkylalkanolamines; organic sulfurs; and amylphenol disulfides, hydroxylamines, and endothall derivatives. These products are used in the production of pharmaceuticals, electronic components, cosmetics, tires, paints, agricultural products, water treatment products, and photography (Atofina Chemicals).

In the early morning hours of 14 July 2001, a methyl mercaptan release from a railcar occurred at the Plant. The Riverview Fire Department initially responded to a 911 call from Plant personnel. The eventual magnitude of the situation resulted in mutual aid assistance from a wide variety of surrounding police and fire departments, including the Downriver Hazmat Team. A total of five railcars were located in the immediate area surrounding the leaking methyl mercaptan railcar. These included two methyl mercaptan and three chlorine railcars. One of the chlorine railcars was also

ultimately damaged in the incident. This damage resulted in the periodic venting of an unknown amount of chlorine gas to the atmosphere.

A prime impact of the fire and explosion was the release and uncontrolled combustion of the chemicals (methyl mercaptan and chlorine) stored in the impacted railcars. This release and uncontrolled combustion of methyl mercaptan and chlorine provided the potential for both chemicals and their combustion byproducts to enter the atmosphere and impact the adjacent communities. Based on this potential and the known toxicity of the chemicals, the Riverview Fire Department and its municipal counterparts made the decision to evacuate portions of four nearby communities: Riverview, Grosse Ile, Trenton, and Wyandotte. At approximately the same time, U.S. and Canadian Coast Guard authorities closed portions of the Detroit River and the Trenton Channel to boaters.

The United States Coast Guard (USCG) was the lead federal response agency based on previously determined federal response jurisdictions. The USCG Marine Safety Office (MSO) Detroit responded to the ATOFINA Plant after receiving news media reports regarding the fire and explosion. MSO Detroit notified the National Response Center (NRC) of the incident at approximately 0735 on 14 July 2001 and requested support from the U.S. EPA. The NRC notified U.S. EPA's Region V Office in Chicago, Illinois, at approximately 0750. Emergency response personnel from the U.S. EPA's Grosse Ile, Michigan, field office were notified at approximately 0800. U.S. EPA On-Scene Coordinator (OSC) Michelle Jaster was mobilized to

Railcars being cooled with water *(The Detroit News)*

the ATOFINA Plant, and OSC Ralph Dollhopf was mobilized to the U.S. EPA Grosse Ile office. START resources from both contractors (WESTON and Tetra Tech) were immediately requested, and the mobilization of appropriate personnel and equipment from across U.S. EPA Region V was initiated. Additional U.S. EPA employees mobilized for the response included Section Chief Jason El-Zein and OSC Robert Buckley.

SECTION 3

EMERGENCY RESPONSE ACTIVITIES

START conducted emergency response activities associated with the ATOFINA Plant incident from 14 July 2001 through 18 July 2001. The START activities were coordinated from locations at the ATOFINA Plant and the U.S. EPA Region V Emergency Operations Center (EOC) at Grosse Ile (Grosse Ile EOC), Wayne County, Michigan. OSC Jaster coordinated U.S. EPA activities in conjunction with the USCG at the ATOFINA Plant. OSC Dollhopf coordinated activities, including START support and data collection, at the Grosse Ile EOC.

START personnel and equipment were mobilized from both contractors (WESTON and Tetra Tech) and their subcontractors. Due to the large-scale response effort, START personnel and equipment were mobilized from locations across U.S. EPA Region V including metro-Detroit; Lansing, Michigan; Chicago, Illinois; Cleveland, Ohio; and Cincinnati, Ohio. The START personnel involved in the ATOFINA Plant incident were as follows:

Name	Company Affiliation	Primary Role
Sally Bartz	WESTON	Air Monitoring/Data Management
Mike Browning	WESTON	TAGA/Air Monitoring
Sabrina Genter	WESTON	Data Management/Water
Chad Hall	WESTON	Air Monitoring/Water Sampling
Kate Hartig	WESTON	Air Monitoring/Water Sampling
Lorie Hong	WESTON	Data Management
John Kmiec	WESTON	Air Monitoring
Ted LaMarre	WESTON	TAGA/Air Monitoring
Shamille Lewis	WESTON	Data Collection
Ben Maradkel	WESTON	TAGA/Air Monitoring

Name	Company Affiliation	Primary Role
Dave Sawicki	Tetra Tech	Air Monitoring
Kelly Smith	Tetra Tech	Air Monitoring
Brian Schlieger	Tetra Tech	Air Monitoring
Bill Kosco	Tetra Tech	Air Monitoring
Stephanie Wenning	TN & Associates, Inc	Air Monitoring
Vince Peters	Altech Environmental Services, Inc. (Altech)	Air Monitoring
Richard Conforti	Altech	Data Management
Ian Kerr	Altech	Data Management

START personnel were involved in a variety of activities during the ATOFINA Plant incident including but not limited to air monitoring, data management, personnel management, presentation preparation support, surface water sampling, photographic documentation, and geographical information system (GIS) documentation.

3.1 CHEMICALS OF CONCERN

The following chemicals or their combustion byproducts were involved in the ATOFINA Plant incident:

Methyl Mercaptan - Methyl mercaptan, also known as methanethiol, is a flammable gas with a rotten cabbage order. It is a common air contaminant and will react with water, steam, or acids to produce toxic and flammable vapors. It can react vigorously with oxidizing materials and, upon decomposition, emits toxic sulfur dioxide fumes (*Rapid Guide to Hazardous Chemicals in the*

Workplace, 1986). It is a common intermediate in the manufacture of jet fuels, pesticides, fungicides, and plastics (*Merck Index* 11th Edition).

Chlorine - Chlorine is a greenish yellow, water soluble gas, liquid, or crystalline material that will react with many materials to cause fire and explosions (*Rapid Guide to Hazardous Chemicals in the Workplace*, 1986). Chlorine is commonly marketed in the form of gas over liquid compressed into steel cylinders. The oxides of chlorine are strong oxidizing agents. It is commonly used in the manufacture of synthetic rubber and plastics, chlorinated hydrocarbons, and a large number of other chemicals. It is also commonly used for disinfection purposes (*Merck Index* 11th Edition).

Sulfur Dioxide - Sulfur dioxide is a colorless gas or liquid with a pungent odor. It can react with water or steam to produce toxic and corrosive vapors or fumes *(Rapid Guide to Hazardous Chemicals in the Workplace*, 1986). It is commonly used in preserving fruits, vegetables, etc.; in disinfecting food factories and breweries; and in bleaching textile fibers, straw, and wicker ware. Liquid sulfur dioxide is also used as a solvent (*Merck Index* 11th Edition).

3.2 MONITORING EQUIPMENT

START used the following direct-reading, handheld monitoring instruments during air monitoring activities associated with the ATOFINA Plant incident.

Draeger colorimetric tubes (Draeger) - Draeger colorimetric detector tubes consist of a glass tube filled with media that contains an indicating chemical. The glass tube is connected to a piston cylinder or bellows-type pump. A known volume of air is pulled at a predetermined rate through the indicator chemical in the tube. The suspected chemical of concern (if present) will react with the indicator chemical and produce a stain whose length is proportional to the concentration of the

chemical of concern in the atmosphere. Detector tubes are normally compound specific; there are different tubes for different chemicals. During the ATOFINA Plant incident, Draeger tubes were used to monitor for the chemicals methyl mercaptan, chlorine, sulfur dioxide, and acids. Methyl mercaptan and chlorine-specific detector tubes were utilized because these chemicals were involved in the fire at the Plant. Sulfur dioxide-specific detector tubes were utilized because sulfur dioxide is a byproduct of the combustion of methyl mercaptan. Acid detector tubes were utilized because both sulfur dioxide and chlorine can react with moisture to form acids (sulfuric acid and hydrochloric acid). The acid detector tubes are generic and only indicate the presence or absence of acids.

Draeger tubes and Draeger pump

Miran 205B Series SapphIRe (SapphIRe) - The SapphIRe is an infrared imaging analyzer capable of detecting concentrations of various specific chemicals at parts per billion (ppb) detection levels. The SapphIRe was used at the ATOFINA Plant incident to monitor for sulfur dioxide, a byproduct of the combustion of methyl mercaptan.

Miran 205B Series SapphIRe

Multi-Rae (photo ionization detector [PID]) - A PID utilizes a light source (ultraviolet lamp) to ionize organic compounds within the instrument's detection range. The electronic impulse that is subsequently generated is displayed as a reading of total volatile organic compounds (VOCs) in the atmosphere. The Multi-Rae was used at the ATOFINA Plant incident to monitor for total VOCs. Because total VOC readings collected could include compounds not directly related to the ATOFINA fire, chemical-specific Draeger tubes were also utilized during the response action to verify the presence or absence of methyl mercaptan in the atmosphere.

Multi-Rae

TVA 1000 (flame-ionization detector [FID]) - A FID utilizes a hydrogen flame to ionize organic compounds. The electronic impulse that is subsequently generated is displayed as a reading of total VOCs in the atmosphere. The FID and PID differ in that the source used to detect VOCs is either a flame or a lamp. In addition, different VOCs can be detected by the different instruments. The TVA 1000 was used at the ATOFINA Plant incident to monitor for total VOCs. Because total VOC readings collected could include compounds not directly related to the ATOFINA fire, chemical-specific Draeger tubes were also utilized during the response action to verify the presence or absence of methyl mercaptan in the atmosphere.

TVA 1000

START utilized the various air monitoring instruments detailed above based on the following rationale:

- Availability;
- Ability to produce real-time air monitoring data;
- Portability;
- Ease of operation;
- Ability to detect specific chemicals of concern with limited cross sensitivity.

The air monitoring instruments were also selected based on the ability to provide verification of the presence or absence of the chemicals of concern using more than one instrument. For example, when a general VOC detection was recorded on the Multi-Rae or TVA 1000, a methyl mercaptan Draeger tube was subsequently used to confirm or refute the presence of that specific chemical.

In addition to the handheld air monitoring equipment START personnel utilized at the ATOFINA Plant incident, the U.S. EPA also mobilized the Toxic Atmospheric Gas Analyzer (TAGA) mobile laboratory unit from the U.S. EPA Environmental Response Team (ERT) in New Jersey. The TAGA lab is equipped with a triple-quad mass spectrometer system that can measure concentrations of preselected compounds in the air at low ppb levels. The TAGA lab is a real-time, instantaneous unit that can provide up to 2,000 readings per half hour while driving through a neighborhood. The TAGA lab was mobilized to provide real-time analysis for methyl mercaptan in the atmosphere surrounding the ATOFINA Plant.

U.S. EPA OSC Dollhopf contacted Aldrich Chemical, Inc., located in Milwaukee, Wisconsin, to obtain a gas sample of methyl mercaptan. The TAGA operators utilized the sample to create the gas standard for calibration of the TAGA equipment. A gas standard was not available locally because the laboratory at the ATOFINA Plant was inaccessible and because other local sources of the gas standard were not available. WESTON mobilized two START personnel from Chicago to deliver the methyl mercaptan gas sample to the Grosse Ile EOC.

3.3 SATURDAY, 14 JULY 2001

On Scene

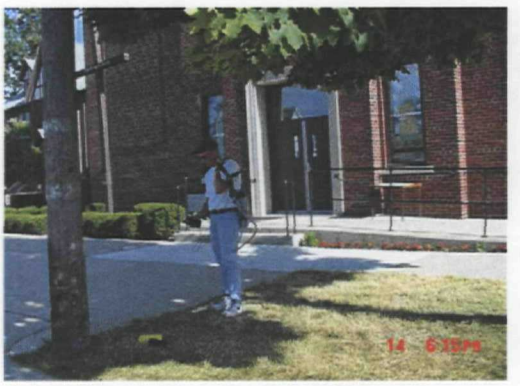
On 14 July 2001, one START member arrived on scene at the command post located at the ATOFINA Plant. OSC Jaster was present at the Plant to provide technical support and assistance to the USCG and other members of the Unified Command. START remained at the Plant at the request of OSC Jaster to assist in the documentation of daily activities.

Grosse Ile EOC

On 14 July 2001, the remaining START personnel arrived at the Grosse Ile EOC. OSC Dollhopf was present at the Grosse Ile office and proceeded with an initial briefing for START personnel to describe the current status of the incident. OSC Dollhopf indicated that areas surrounding the Plant in Wyandotte, Trenton, Riverview, and Grosse Ile had been evacuated. At the request of the Riverview Fire Chief/Incident Commander, Chief Robert Hale, U.S. EPA tasked START to initiate air monitoring activities. The air monitoring was to be conducted within the evacuation areas surrounding the Plant in both the upwind and downwind directions. Fire Department representatives requested that the air monitoring be initiated at the southern boundary of the evacuation zone (Ferry Rd. on Grosse Ile and King Rd. in Trenton) and progress to the north if the chemicals of concern were not detected.

START personnel completed an inventory and calibration of the available monitoring equipment. The following air monitoring equipment was available for START's use at the initiation of the air monitoring activities: Draeger colorimetric tubes (chlorine, sulfur dioxide, and acid), Draeger hand pumps, Multi-Rae PID detectors, and one TVA 1000 FID detector. The SapphIRe was not available

during the initial round of air monitoring as it was en route from the Cincinnati, Ohio, START office.



START air monitoring

Initially, eight START personnel were assembled into four 2-person air monitoring teams. Each team was assigned specific zones within the evacuation area to conduct air monitoring. The monitoring locations are identified on **Appendix B, Figures 1 and 2**. All four teams conducted air monitoring using Draeger tubes, Multi-Raes, and/or the TVA 1000.

START began Round 1 air monitoring activities at 1330 on 14 July 2001. Two of the START monitoring teams remained on Grosse Ile to monitor the evacuation area on the island. The other two START air monitoring teams mobilized to Trenton and southern Riverview. All START air monitoring teams initiated monitoring activities at the furthest point downwind from the Plant within the evacuation area. The START teams then progressed north towards the ATOFINA Plant.

On Grosse Ile, START monitored at nine major intersections, including the following monitoring locations:

1) Meridian Rd. & Ferry Rd.;
2) Meridian Rd. & Church Rd.;
3) Meridian Rd. & Horsemill Rd.;
4) Parke Lane Dr. & Horsemill Rd.;
5) Parke Lane Dr. & Bridge Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
8) West River Rd. & Highland Dr.;

9) West River Rd. & Ferry Rd.
34) Parke Lane Dr. & Church Rd.;
35) Point Hinnepin.

Air monitoring data obtained during Round 1 monitoring on Grosse Ile are presented in **Appendix A, Table 1.**

START air monitoring at Riverview locations

In Riverview and Trenton, the START teams monitored at six major intersections beginning in downtown Trenton.

The major intersections included the following monitoring locations:

10) West Jefferson Ave. & Harrison Ave.;
11) West Jefferson Ave. & King Rd.;
12) West Jefferson Ave. & West Rd.;
13) Sibley Rd. & West Jefferson Ave.;
14) Riverview St. & RR Tracks;
15) Harrison Ave. & 5th St.

Air monitoring data results obtained during Round 1 monitoring in Riverview and Trenton are presented in **Appendix A, Table 1.**

The initial round of air monitoring results were recorded in the field. The data was complied and tabulated into an Excel® spreadsheet and plotted in an Arcview GIS at the Grosse Ile EOC. OSC Dollhopf routinely briefed OSC Jaster on the results as the sampling teams reported back to the Grosse Ile EOC. OSC Jaster updated the Unified Command at the On-Scene Command Post, as

appropriate. Wayne County Department of Public Health personnel conferred with multiple health agencies to determine that the levels of contaminants did not exceed appropriate guidelines. Data from all subsequent sampling rounds were provided to Wayne County for review.

Following completion of the Round 1 activities, additional monitoring equipment arrived at the Grosse Ile EOC. This additional equipment included Draeger colorimetric tubes (methyl mercaptan, chlorine, sulfur dioxide, and acids), a TVA 1000, and a SapphIRe.

After a review of the initial results from Round 1 on 14 July (Round 1 collected between 1330 and 1600), three START teams conducted a second round of air monitoring (Round 2 collected between 1600 and 1935) in an expanded area of Trenton, Riverview, and Wyandotte **(Appendix B, Figure 2).** The START air monitoring teams used Draeger tubes, a Multi-Rae, a TVA 1000, and a SapphIRe. Round 2 air monitoring was conducted at major intersections along West Jefferson Ave. and along Pennsylvania Rd., including the following monitoring locations:

16) Bridge Rd. & West Jefferson Ave.;
17) West Jefferson Ave. in front of the ATOFINA Plant;
18) Pennsylvania Rd. & Electric St.;
19) Pennsylvania Rd. & Conrail RR Tracks;
20) Pennsylvania Rd. & Quarry Rd.;
21) West Jefferson Ave. & Ford Ave. - 100 feet south;
22) West Jefferson Ave. - 1,500 feet north of Sibley Rd.;
23) West Jefferson Ave. & Pennsylvania Rd.;
24) West Jefferson Ave. between RR Tracks and Pennsylvania Rd.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
29) Plum St. & 9th St.;
30) Sibley Rd. & Fort St.;
31) Pennsylvania Rd. & Fort St.

The teams progressed toward the ATOFINA Plant collecting air monitoring data along the following minor roads from locations around the Plant perimeter:

36) Tollbridge on the River;
37) West Rd. & 5th St.;
38) West Jefferson Ave. & the southern boundary of ATOFINA;
40) Biddle Ave. & Grove St.;
41) Biddle Ave. & Wyandotte St.;
42) Sibley Rd. & Riverview St.;
43) 753 Forrest St.;
44) Sibley Rd. & Ray St.;
45) Ford Ave. halfway between West Jefferson Ave. and the River;
46) Sibley Rd. & Quarry Rd.;
49) Pennsylvania Rd. between West Jefferson Ave. and Electric St.

Air monitoring results from Round 2 are provided in **Appendix A, Table 1.**

START personnel not involved in air monitoring activities provided data and personnel management at the Grosse Ile EOC. Data from the second round of air monitoring was conveyed from the field to the Grosse Ile EOC via telephone to expedite the data tabulating process. The data was compiled into the spreadsheet and plotted on the Arcview GIS. OSC Dollhopf routinely briefed OSC Jaster on the results as the teams reported back to the EOC. OSC Jaster again updated the Unified Command at the On-Scene Command Post with the results for review.

Following the completion of the second round of air monitoring at 1935, it was determined that a comparison of day versus night air monitoring readings would be beneficial. Temperatures and wind speeds typically decrease at night, and the potential for migration of the chemicals of concern was dependent on both of these factors.

At 2220, three START monitoring teams initiated the third round of air monitoring activities (Round 3 collected between 2223 and 0015). The air monitoring was conducted at some locations previously monitored during the day. The sample locations were dispersed throughout the evacuation areas and included locations in Grosse Ile, Riverview, Trenton, and Wyandotte **(Appendix B, Figure 3).** The locations were selected based on the results of the previous round of air monitoring and are as follows:

1) Meridian Rd. & Ferry Rd.;
2) Meridian Rd. & Church Rd.;
3) Meridian Rd. & Horsemill Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
11) West Jefferson Ave. & King Rd.;
13) Sibley Rd. & West Jefferson Ave.;
19) Pennsylvania Rd. & Conrail RR Tracks;
20) Pennsylvania Rd. & Quarry Rd.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
29) Plum St. & 9th St.;
30) Sibley Rd. & Fort St.;
31) Pennsylvania Rd. & Fort St.;
36) Tollbridge on the River;
38) West Jefferson Ave. & the southern boundary of ATOFINA.

The START monitoring teams again utilized Draeger tubes, a Multi-Rae, a SapphIRe, and TVA 1000s. An additional SapphIRe became available during the third round and was utilized by START personnel. The results were again reported to the Unified Command at the On-Scene Command Post. Air monitoring results for Round 3 are provided in **Appendix A, Table 1.**

Following completion of the third round of air monitoring at 0015 on 15 July 2001, all START monitoring teams returned to the Grosse Ile EOC for a debriefing. The majority of START

personnel then left the Grosse Ile EOC for the night; however, a skeleton crew of START personnel remained at the Grosse Ile EOC throughout the night on an on-call basis. OSC Jaster notified the USCG and the Unified Command of START's availability if additional air monitoring concerns arose overnight.

3.4 SUNDAY, 15 JULY 2001

On Scene

On 15 July 2001, OSC Jaster, U.S. EPA Section Chief Jason El-Zein, and one START contractor arrived at the ATOFINA Plant at 0830. U.S. EPA and START continued to support USCG MSO Detroit and USCG Atlantic Strike Team (AST) activities as requested. The START contractor at the ATOFINA Plant assisted in the documentation activities.

Grosse Ile EOC

On 15 July 2001, the remaining START members remobilized to the U.S. EPA Grosse Ile EOC. Activities conducted here included a briefing by OSC Dollhopf, the additional compilation and tabulation of air monitoring data, and the compilation of data into a presentation format. START was tasked to conduct air monitoring in the morning (Round 4), and the TAGA lab was being prepared to conduct air monitoring in the afternoon.

Following the briefing, START assembled a PowerPoint® presentation summarizing U.S. EPA air monitoring activities. The presentation included photographs of the air monitoring instruments START personnel used and the preliminary air monitoring results from 14 July 2001.

In preparation for the fourth round of air monitoring, START personnel completed calibration of the available monitoring equipment, including the Draeger hand pumps, the Multi-Raes, the SapphIRes, and a TVA 1000. Following calibration, the START monitoring teams initiated the fourth round of air monitoring at approximately 0915 and completed the round at 1240. The START teams conducted air monitoring using Draeger tubes, Multi-Raes, the SapphIRes, and/or the TVA 1000.

The START teams collected data at the following monitoring locations during the fourth round of monitoring (**Appendix B, Figure 4**):

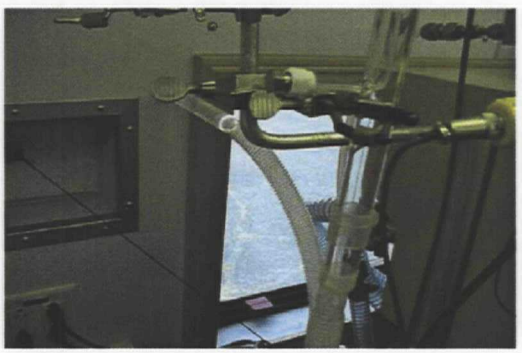
1) Meridian Rd. & Ferry Rd.;
2) Meridian Rd. & Church Rd.;
3) Meridian Rd. & Horsemill Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
11) West Jefferson Ave. & King Rd.;
13) Sibley Rd. & West Jefferson Ave.;
19) Pennsylvania Rd. & Conrail RR Tracks;
20) Pennsylvania Rd. & Quarry Rd.;
23) West Jefferson Ave. & Pennsylvania Rd.;
24) West Jefferson Ave. between RR Tracks & Pennsylvania Rd.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
29) Plum St. & 9th St.;
30) Sibley Rd. & Fort St.;
31) Pennsylvania Rd. & Fort St.;
36) Tollbridge on the River.;
38) West Jefferson Ave. & the southern boundary of ATOFINA;
47) King Rd. & Fort St.;
48) West Jefferson Ave. & Atwood St.

Air monitoring data obtained from Round 4 are presented in **Appendix A, Table 2.**

TAGA van at a sample location

At 1000, two START personnel arrived at the Grosse Ile EOC with the gas sample of methyl mercaptan from Aldrich Chemical, Inc. START aided the TAGA personnel in preparing the TAGA lab for air monitoring. The methyl mercaptan gas sample was used to prepare a calibration standard, and a point calibration was developed.

At 1220, the TAGA lab mobilized into the field and initiated air monitoring in the evacuation areas immediately surrounding the ATOFINA Plant. Real-time air samples were analyzed for methyl mercaptan using the instruments on board the TAGA lab. A map of the TAGA air monitoring locations is provided in **Appendix B, Figure 8.** The TAGA lab proceeded to additional areas throughout Riverview and the northern end of Grosse Ile. The TAGA lab completed air monitoring activities at 1615. The TAGA results were telephoned to OSC Dollhopf at the Grosse Ile EOC. Results of air monitoring conducted by the TAGA lab indicated detections of VOCs (including methyl mercaptan) at levels so low they could not be quantified because they were below the instrument detection limit of 250 ppb.



Air monitoring port in TAGA vehicle

Millions of gallons of water were applied to the ATOFINA Plant to extinguish the fire and cool the adjacent railcars. The wastewater generated from this effort was discharged to the Trenton Channel of the Detroit River via the Plant's storm water outfall. START members located the Plant's storm water outfall as it entered the Trenton Channel of the Detroit River. START observed water entering the Trenton Channel of the Detroit River from the Plant's outfall; the outfall pipe was located beneath the water surface. Detectable odors were not documented in the vicinity of the outfall. START conducted air monitoring at the Plant's outfall location using the air monitoring equipment. There were no detections recorded on any of the instruments at the outfall; therefore, no results were tabulated for these monitoring activities.

Area above the outfall from the ATOFINA Plant into the Trenton Channel of the Detroit River

AT 1150, OSC Jaster and Section Chief El-Zein telephoned the Grosse Ile EOC and reported observing strong odors on West Jefferson Ave. between Pennsylvania Rd. and Bridge Rd. A START team mobilized to the location and began conducting Round 5 air monitoring activities. The results of these air monitoring activities are provided in **Appendix A, Table 2** at monitoring locations 23 and 24.

At 1540, OSC Dollhopf received a request from the Grosse Ile Police Department for air monitoring at the Police/Fire Station. The Police Department was concerned that residual methyl mercaptan vapors were present in clothing worn by officers during the evacuation of Grosse Ile. START conducted air monitoring

of bagged police uniforms using the air monitoring instruments. Methyl mercaptan was not detected on any of the monitored clothing; therefore, no results were tabulated for these monitoring activities.

Air monitoring results were again provided to the Unified Command at the On-Scene Command Post throughout the day as they became available. At 1640, OSC Dollhopf, OSC Jaster, Section Chief El-Zein, and OSC Buckley conducted a debriefing of the day's activities at the Grosse Ile EOC. An overview of the anticipated activities for 16 July 2001 was also presented. START demobilized at 1700.

3.5 MONDAY, 16 JULY 2001

On Scene

On 16 July 2001, OSC Jaster was present at the ATOFINA Plant and provided technical support and assistance to the USCG MSO Detroit and the AST as requested.

Grosse Ile EOC

START arrived at the Grosse Ile EOC. OSC Jaster requested that air monitoring be conducted around the perimeter of the ATOFINA Plant. START personnel completed calibration of the available monitoring equipment, including the Draeger hand pumps, the Multi-Raes, the SapphIRes, and a TVA 1000, in preparation for the fifth round of monitoring (Round 5 collected between 0830 and 1200). Following equipment calibration, the START monitoring teams initiated air monitoring. The START monitoring teams conducted air monitoring using Draeger tubes, Multi-Raes, the SapphIRes, and/or the TVA 1000.

OSC Jaster requested that START conduct Round 5 air monitoring at locations around the ATOFINA Plant and in the former evacuation zone in Riverview, Trenton, and Grosse Ile. The monitoring locations included the following intersections:

1) Meridian Rd. & Ferry Rd.;
2) Meridian Rd. & Church Rd.;
3) Meridian Rd. & Horsemill Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
11) West Jefferson Ave. & King Rd.;
12) West Jefferson Ave. & West Rd.;
13) Sibley Rd. & West Jefferson Ave.;
16) Bridge Rd. & West Jefferson Ave.;
19) West Jefferson Ave. & Conrail RR Tracks;
20) Quarry Rd. & Pennsylvania Rd.;
21) West Jefferson Ave. & Ford Ave. - 100 feet south;
23) West Jefferson Ave. & Pennsylvania Rd.;
24) West Jefferson Ave. between RR Tracks and Pennsylvania Rd.;
26) Colvin St. & Electric St.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
29) Plum St. & 9th St.;
30) Sibley Rd. & Fort St.;
31) Pennsylvania Rd. & Fort St.

Following the completion of the Round 5 air monitoring activities, the data were complied and tabulated at the Grosse Ile EOC **(see Appendix A, Table 3 and Appendix B, Figure 5)**.

At 1645, START air monitoring teams initiated Round 6 air monitoring activities (Round 6 collected between 1645 and 1810). The monitoring was conducted at various data collection locations visited over the course of the monitoring activities. The specific Round 6 monitoring locations included the following:

3) Meridian Rd. & Horsemill Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
12) West Jefferson Ave. & West Rd.;
16) Bridge Rd. & West Jefferson Ave.;
20) Pennsylvania Rd. & Quarry Rd.;
24) West Jefferson between the RR Tracks & Pennsylvania Rd.;
25) Pennsylvania Rd. & Central Ave.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
33) 18th St. & Orchard St.

Results of Round 6 air monitoring activities are presented in Appendix A, Table 3. Air monitoring locations are presented in **Appendix B, Figure 6.**

ATOFINA had established a telephone hotline to provide answers to questions and note complaints regarding the ATOFINA Plant incident. The hotline received complaints of strong odors in and near their private residences from several area residents. The U.S. EPA assisted ATOFINA by tasking START to conduct Round 7 air monitoring at three residences (Round 7 collected between 1900 and 2015). Air monitoring data obtained during the residential monitoring activities is presented in **Appendix A, Table 4.** There were no detections on the acid, chlorine, methyl mercaptan, and sulfur dioxide Draeger tubes in any of the residences.

Following completion of daily and residential air monitoring, results were provided to the Unified Command at the On-Scene Command Post.

3.6 TUESDAY, 17 JULY 2001

On Scene

On 17 July 2001, OSC Jaster was present at the Plant and provided technical support and assistance to the USCG MSO Detroit and the AST as requested.

Grosse Ile EOC

START personnel completed calibration of the available monitoring equipment, including the Draeger hand pumps, the Multi-Raes, the SapphIRes, and a TVA 1000. Following calibration, the START monitoring teams initiated air monitoring. The START monitoring teams conducted air monitoring using Draeger tubes, Multi-Raes, the SapphIRes, and/or the TVA 1000. On 17 July 2001, START conducted only one round (Round 8) of air monitoring (Round 8 collected between 0905 and 1120). Data were collected at the following monitoring locations:

3) Meridian Rd. & Horsemill Rd.;
6) Meridian Rd. & Bridge Rd.;
7) Meridian Rd. & Parke Lane Dr.;
12) West Jefferson Ave. & West Rd.;
16) Bridge Rd. & West Jefferson Ave.;
20) Pennsylvania Rd. & Quarry Rd.;
24) West Jefferson Ave. between RR Tracks & Pennsylvania Rd.;

25) Pennsylvania Rd. & Central Ave.;
27) Biddle Ave. & Plum St.;
28) Quarry Rd. & Longsdorf St.;
33) 18th St. & Orchard St.

Air monitoring locations from Round 8 are presented in **Appendix B, Figure 7,** and data obtained during the monitoring are presented in **Appendix A, Table 5.**

START also collected Geographic Positioning System (GPS) readings at all locations where air monitoring activities had been completed. GPS readings are presented in **Appendix A, Table 6.** START utilized a Magellan handheld GPS unit to document the GPS readings. START completed the collection of GPS readings at 1450 and returned to the Grosse Ile EOC. Results were again provided to the Unified Command at the On-Scene Command Post. Following a short debriefing by the U.S. EPA, START demobilized.

Following this round, the air monitoring program was transitioned to an independent third party, an environmental contractor hired by ATOFINA. ATOFINA contracted CTEH of Little Rock, Arkansas, to conduct additional air monitoring. OSCs Dollhopf and Jaster assisted in the transition of the air monitoring program to CTEH at the request of the USCG MSO Detroit. This assistance included the review of CTEH's credentials and the proposed air monitoring and air monitoring plans.

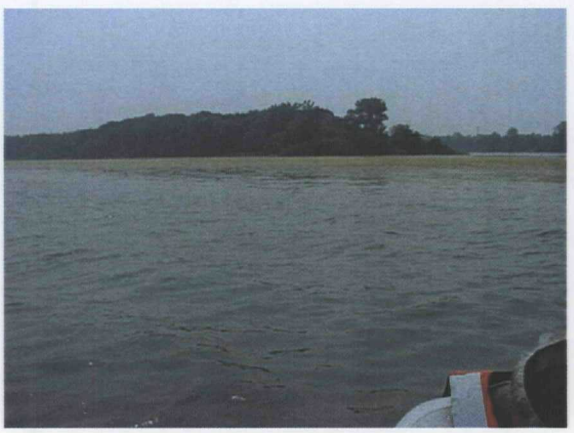
3.7 WEDNESDAY, 18 JULY 2001

At the request of Ms. Lisa Williams of the U.S. Fish and Wildlife Service (U.S. FWS), the U.S. EPA tasked START to collect surface water samples from the Trenton Channel of the Detroit River.

START collected the surface water samples from three locations in the Trenton Channel of the Detroit River. These locations included an area adjacent to the ATOFINA Plant outfall, an area adjacent to the Humbug Marsh, and an area approximately halfway between the aforementioned locations (near the former McLouth Steel property). **Appendix B, Figure 9** shows the surface water sampling locations.

At 1300, START personnel, OSC Jaster, and Mr. Dave Best of the U.S. FWS arrived at the City of Riverview boat launch. The first sample was collected near the ATOFINA Plant outfall. A duplicate sample was also collected at this location. The sample was collected from a depth of approximately 3 feet below the water surface utilizing a glass sampling bottle that had been attached to a polyvinyl chloride (PVC) pole. The sample material was transferred into precleaned laboratory sample bottles. Five volatile organic analysis (VOA) vials and one 8-ounce glass bottle were collected. A field pH reading and GPS coordinates were obtained and recorded in the field log book.

The second sample was collected at 1430 near Humbug Marsh, approximately 6 feet below the water surface. The third sample was collected at 1530 halfway between the Humbug Marsh and the ATOFINA Plant outfall in a location near the former McLouth Steel property. The third surface water sample was collected approximately 6 feet below the water surface. Field pH and GPS coordinates were recorded for both samples. START delivered all samples to Clayton Laboratories in Novi, Michigan, for methyl mercaptan and pH analysis.



View of Humbug Marsh

The analytical results indicated no detections of methyl mercaptan above the detection limit in any of the three samples and pH readings of 7.3, 8.0 and 8.4, respectively. Refer to **Appendix A** for the complete laboratory data package.

APPENDIX A

Air Monitoring Data Tables

TABLE 1

Air Monitoring Data Collected on 14 July 01
Rounds 1-3
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2*	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	SO_2 Sensitivity	Cl_2 Sensitivity	M Sensitivity
10	West Jefferson Ave. & Harrison Ave.	1	13:30	0.31	-0.04	--	ND	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--
11	West Jefferson Ave. & King Rd.	1	13:40	0.43	0.29	--	ND	Draeger colorimetric tubes	+	ND	--	0-5ppm	0-5ppm	--
1	Meridian Rd. & Ferry Rd.	1	14:45	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
2	Meridian Rd. & Church Rd.	1	14:50	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
12	West Jefferson Ave. & West Rd.	1	15:00	0.41	-0.13	--	ND	Draeger colorimetric tubes	+	ND	--	0-5ppm	0-5ppm	--
11	West Jefferson Ave. & King Rd.	1	15:05	-0.04	0.47	--	ND	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--
3	Meridian Rd. & Horsemill Rd.	1	15:06	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
4	Parke Lane Dr. & Horsemill Rd.	1	15:10	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
5	Parke Lane Dr. & Bridge Rd.	1	15:20	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
6	Meridian Rd. & Bridge Rd.	1	15:21	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
13	Sibley Rd. & West Jefferson Ave.	1	15:28	0.05	1.29	--	ND	Draeger colorimetric tubes	ND	ND	0	0-5ppm	0-5ppm	0-2ppm
7	Meridian Rd. & Parke Lane Dr.	1	15:35	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
34	Parke Lane Dr. & Church Rd.	1	15:35	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
8	West River Rd. & Highland Dr.	1	15:45	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
35	Point Hinnepin	1	15:45	0	--	--	--	Draeger colorimetric tubes	--	--	--	0.5-5ppm	0-5ppm	--
14	Riverview St. & RR Tracks	1	15:55	0.11	1.55	--	0.2	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--
15	Harrison Ave. & 5th St.	1	16:00	0.48	0.21	--	ND	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--
9	West River Rd. & Ferry Rd.	1	16:02	0	--	--	ND	Draeger colorimetric tubes	--	ND	--	0.5-5ppm	0-5ppm	--
36	Tollbridge on the River	2	16:10	0.12	1.69	--	ND	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--
37	West Rd. & 5th St.	2	16:15	0.40	0.47	--	ND	Draeger colorimetric tubes	ND	ND	--	0-5ppm	0-5ppm	--

TABLE 5

Air Monitoring Data Collected on 17 July 01
Round 8
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	$S0_2$ Sensitivity	Cl_2 Sensitivity	M Sensitivity
28	Quarry Rd. & Longsdorf St.	8	9:05	0.04	0.37	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
20	Pennsylvania Rd. & Quarry Rd.	8	9:15	0.07	0.54	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
7	Meridian Rd. & Parke Lane Dr.	8	9:30	0	0	ND	Draeger colorimetric tubes	--	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
33	18th St. & Orchard St.	8	9:40	0.06	0.49	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
27	Biddle Ave. & Plum St.	8	9:50	0.08	0.53	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
6	Meridian Rd. & Bridge Rd.	8	10:00	0.17	0	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.3-5ppm	0.5-5ppm
25	Pennsylvania Rd. & Central Ave.	8	10:10	0.11	0.8	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
3	Meridian Rd. & Horsemill Rd.	8	10:15	0	0.04	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.3-5ppm	0.5-5ppm
24	West Jefferson Ave. between RR Tracks & Pennsylvania Rd.	8	10:40	0.12	0.85	ND	Draeger colorimetric tubes	--	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
16	Bridge Rd. & West Jefferson Ave.	8	11:00	0.14	0.92	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm
12	West Jefferson Ave. & West Rd.	8	11:20	0.13	1.03	ND	Draeger colorimetric tubes	ND	ND	ND	0.2-7ppm	0.3-5ppm	0.5-5ppm

Notes:

The symbol -- indicates no data was collected at this specific time and location using this particular instrument.
ND - Not detected. Air monitoring data were collected at this station, but elevated results were not detected.
PID - photo-ionization detector (Multi-Rae)
FID - flame-ionization detector (TVA 1000)
SO_2 - sulfur dioxide
Cl_2 - chlorine
M - methyl mercaptan

TABLE 4

Residential Air Monitoring Data Collected on 17 July 01
Round 7
ATOFINA Emergency Response
Wayne County, Michigan

Location	Round No.	Time of Sample	PID	FID	Cl_2	M	Notes	Cl_2 Sensitivity	M Sensitivity
Residence A									
Outside background	7	19:00	0.01	0.25	--	--		--	--
Basement	7	19:00	0.53	3.2	--	--		--	--
Basement Sump Area	7	19:00	0.5	3.48	--	ND		--	0.5-5ppm
Kitchen Area	7	19:00	0.52	3.46	--	--	Elevated readings were caused by bleach cleaners used to clean this area.	--	--
Boy's Room	7	19:00	0.51	3.46	--	ND		--	0.5-5ppm
Girl's Room	7	19:00	0.5	3.44	ND	ND		0.3-5ppm	0.5-5ppm
3rd Floor Breathing Zone	7	19:00	0.31	1.85	--	--	Drywall contractors were in this area today.	--	--
Residence B									
Outside Background	7	19:50	ND	0.05	--	--		--	--
1st Floor Breathing Zone	7	19:50	ND	0.14	--	ND		--	0.5-5ppm
Basement Area	7	19:50	0.3-0.5	18.9-60	--	ND	Residents reported that they have had sewer and flooding problems. There was a distinct musty odor and a wide variety of household chemicals and paint stored in basement.	--	0.5-5ppm
Upper Floor Bedroom	7	19:50	ND	0.42	--	--		--	--
Residence C									
Outside Background	7	20:15	0.06	0.83	--	--		--	--
Baby's Room	7	20:15	ND	ND	--	--	No levels above background were detected.	--	--
Upper Level of House	7	20:15	0.06	0.83	--	--	Results observed were at background levels.	--	--
1st Floor	7	20:15	--	--	--	ND		--	0.5-5ppm
Basement Area	7	20:15	ND	1.08	--	--		--	--

Notes:

The symbol -- indicates no data was collected at this specific time and location using this particular instrument.
ND - Not detected. Air monitoring data were collected at this station, but elevated results were not detected.
PID - photo-ionization detector (Multi-Rae)
FID - flame-ionization detector (TVA 1000)
Cl_2 - chlorine
M - methyl mercaptan

TABLE 3

Air Monitoring Data Collected on 16 July 01
Rounds 5 and 6
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2	SO_2	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	$S0_2$ Sensitivity	Cl_2 Sensitivity	M Sensitivity
16	Bridge Rd. & West Jefferson Ave.	5	8:30	-0.93	-0.21	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
21	West Jefferson Ave. & Ford Ave. - 100 feet south	5	8:35	0.13	0.96	0.64	--	--	SapphIRe	--	ND	ND	1.2-30 ppm	0.2-5ppm	0.5-5ppm
24	West Jefferson Ave. between RR Tracks & Pennsylvania Rd.	5	8:50	0.01	0.04	ND	0	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
26	Colvin St. & Electric St.	5	8:55	0	0.06	0.12	--	--	SapphIRe	--	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
23	West Jefferson Ave. & Pennsylvania Rd.	5	9:00	0.04	0.15	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
19	Pennsylvania Rd. & Conrail RR Tracks	5	9:15	0	0.02	0.29	--	--	SapphIRe	--	ND	ND	1.2-30 ppm	0.5-5 ppm	--
1	Meridian Rd. & Ferry Rd.	5	9:45	0	0	--	--	--	Draeger colorimetric	--	--	--	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
27	Biddle Ave. & Plum St.	5	9:50	0.06	0.29	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
29	Plum St. & 9th St.	5	9:50	0.06	0.26	ND	--	--	SapphIRe	--	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
2	Meridian Rd. & Church Rd.	5	10:00	0.04	0.2	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
20	Pennsylvania Rd. & Quarry Rd.	5	10:05	0.09	0.55	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
3	Meridian Rd. & Horsemill Rd.	5	10:15	0.06	0.26	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
31	Pennsylvania Rd. & Fort St.	5	10:15	0.09	0.69	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
6	Meridian Rd. & Bridge Rd.	5	10:25	0.03	0.15	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
28	Quarry Rd. & Longsdorf St.	5	10:30	0.08	0.43	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
30	Sibley Rd. & Fort St.	5	10:40	0.08	0.41	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
7	Meridian Rd. & Parke Lane Dr.	5	11:20	0.02	0.04	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
13	Sibley Rd. & West Jefferson Ave.	5	11:30	0.13	0.39	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
12	West Jefferson Ave. & West Rd.	5	11:50	0.01	0.03	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
11	West Jefferson Ave. & King Rd.	5	12:00	0.14	0.42	ND	--	--	SapphIRe	ND	ND	ND	1.2-30 ppm	0.3-5 ppm	0.5-5 ppm
3	Meridian Rd. & Horsemill Rd.	6	16:45	0.01	0	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5ppm	0.3-5ppm	0.5-5ppm
6	Meridian Rd. & Bridge Rd.	6	17:00	0	0.18	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
27	Biddle Ave. & Plum St.	6	17:00	0.01	0.16	--	--	ND	Draeger colorimetric	ND	ND	ND	0.5-7ppm	0.3-5 ppm	0.5-5 ppm
7	Meridian Rd. & Parke Lane Dr.	6	17:10	0	0.05	--	--	--	Draeger colorimetric	--	--	--	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
33	18th St. & Orchard St.	6	17:15	0.03	0.63	--	--	ND	Draeger colorimetric	ND	ND	ND	0.2-7ppm	0.3-5 ppm	0.5-5 ppm
16	Bridge Rd. & West Jefferson Ave.	6	17:20	0	0.02	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
25	Pennsylvania Rd. & Central Ave.	6	17:40	0.02	0.66	--	--	ND	Draeger colorimetric	ND	ND	ND	0.2-7ppm	0.3-5 ppm	0.5-5 ppm
12	West Jefferson Ave. & West Rd.	6	17:45	0.01	0.02	--	--	ND	Draeger colorimetric		ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
20	Pennsylvania Rd. & Quarry Rd.	6	17:55	0.03	0.72	--	--	ND	Draeger colorimetric	ND	ND	ND	0.2-7ppm	0.3-5 ppm	0.5-5 ppm
24	West Jefferson Ave. between RR Tracks & Pennsylvania Rd.	6	18:10	0	0.01	--	--	ND	Draeger colorimetric	--	ND	ND	0.5-5 ppm	0.3-5 ppm	0.5-5 ppm
28	Quarry Rd. & Longsdorf St.	6	18:10	0.04	0.79	--	--	ND	Draeger colorimetric	ND	ND	ND	.2-7ppm	0.3-5ppm	0.5-5ppm

Notes:

The symbol -- indicates no data was collected at this specific time and location using this particular instrument.
ND - Not detected. Air monitoring data were collected at this station, but elevated results were not detected.
PID - photo-ionization detector (Multi-Rae)
FID - flame-ionization detector (TVA 1000)
SO_2 - sulfur dioxide
Cl_2 - chlorine
M - methyl mercaptan

TABLE 2

Air Monitoring Data Collected on 15 July 01
Round 4
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2[1]	SO_2[1]	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	$S0_2$ Sensitivity	Cl_2 Sensitivity	M Sensitivity
7	Meridian Rd. & Parke Lane Dr.	4	9:25	0.01	0.03	--	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
48	West Jefferson Ave. & Atwood St.	4	9:25	0.07	0.85	3.69	2.11	ND	SapphIRe/Draeger tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
29	Plum St. & 9th St.	4	9:30	-0.1	0.02	ND	--	--	SapphIRe	--	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm
6	Meridian Rd. & Bridge Rd.	4	9:45	0.02	0.1	--	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
27	Biddle Ave. & Plum St.	4	9:50	0	0.22	ND	--	--	SapphIRe	ND	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm
11	West Jefferson Ave. & King Rd.	4	10:00	0.11	0.8	0.79	0.69	ND	SapphIRe/Drager tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
3	Meridian Rd. & Horsemill Rd.	4	10:05	0	0	--	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
19	Pennsylvania Rd. & Conrail RR Tracks	4	10:10	0.03	0.83	ND	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.3-5ppm	0.5-5ppm
2	Meridian Rd. & Church Rd.	4	10:15	0.01	0.04	--	--	ND	Draeger tubes	--	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
20	Pennsylvania Rd. & Quarry Rd.	4	10:20	0.02	1.14	ND	--	--	SapphIRe	ND	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm
47	King Rd. & Fort St.	4	10:20	0.11	0.71	1.19	1.34	ND	SapphIRe/Draeger tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
31	Pennsylvania Rd. & Fort St.	4	10:34	0.00	0.69	ND	--	--	SapphIRe	ND	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm
30	Sibley Rd. & Fort St.	4	10:35	0.14	1.31	1.45	1.32	--	SapphIRe/Draeger tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
28	Quarry Rd. & Longsdorf St.	4	10:45	0.01	0.76	ND	--	--	SapphIRe	+	ND	ND	1.2-30ppm	0.5-5ppm	0.5-5ppm
1	Meridian Rd. & Ferry Rd.	4	10:50	0.04	0.09	--	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
13	Sibley Rd. & West Jefferson Ave.	4	10:50	0.16	1.4	1.29	1.39	ND	SapphIRe/Drager tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
36	Tollbridge on the River	4	11:00	0.16	1.2	0.29	0.59	ND	SapphIRe/Drager tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
38	West Jefferson Ave. & the southern boundary of ATOFINA	4	11:10	0.18	2.12 & 1.50	1.32	1.54	ND	SapphIRe/Drager tubes	+	ND	ND	0.2-30ppm	0.2-3ppm	0.5-5ppm
23	West Jefferson Ave. & Pennsylvania Rd.	4	12:25	0.02	1.24	ND	--	--	SapphIRe - slight odor	+	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm
24	West Jefferson Ave. between RR Tracks & Pennsylvania Rd.	4	12:40	0.14	1.72	ND	--	--	SapphIRe - heavy odor	+	ND	ND	1.2-30ppm	0.3-5ppm	0.5-5ppm

Notes:

[1] These readings were gathered using two different Miran SapphIRe Analyzers.

The symbol -- indicates no data was collected at this specific time and location using this particular instrument.

ND - Not detected. Air monitoring data were collected at this station, but elevated results were not detected.

PID - photo-ionization detector (Multi-Rae)

FID - flame-ionization detector (TVA 1000)

SO_2 - sulfur dioxide

Cl_2 - chlorine

M - methyl mercaptan

TABLE 1

Air Monitoring Data Collected on 14 July 01
Rounds 1-3
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2*	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	SO_2 Sensitivity	Cl_2 Sensitivity	M Sensitivity
44	Sibley Rd. & Ray St.	2	19:25	0.44	0.48	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
45	Ford Ave. halfway between West Jefferson Ave. and the River	2	19:35	0.09	2.9	--	ND	Draeger colorimetric tubes	ND	ND	ND	0-5ppm	0-5ppm	0.5-5ppm
46	Sibley Rd. & Quarry Rd.	2	19:35	0.4	0.34	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	.2-3ppm	0.5-5ppm
7	Meridian Rd. & Parke Lane Dr.	3	22:23	0	0.1	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0-5ppm	0.5-5ppm
31	Pennsylvania Rd. & Fort St.	3	22:30	0.32	0.21	4.2	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
11	West Jefferson Ave. & King Rd.	3	22:39	0.06	1.27	--	ND	SapphIRe	ND	ND	ND	0-5ppm	0-5ppm	0.5-5ppm
13	Sibley Rd. & West Jefferson Ave.	3	23:00	0.06	1.74	--	ND	SapphIRe	ND	ND	ND	0-5ppm	0-5ppm	0.5-5ppm
20	Pennsylvania Rd. & Quarry Rd.	3	23:00	0.34	0.2	ND	--	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
6	Meridian Rd. & Bridge Rd.	3	23:05	0	0.46	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0-5ppm	0.5-5ppm
19	Pennsylvania Rd. & Conrail RR Tracks	3	23:10	0.37	0.23	ND	ND	Draeger colorimetric	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
36	Tollbridge on the River	3	23:20	0.04	1.83	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
3	Meridian Rd. & Horsemill Rd.	3	23:25	0	0.74	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0-5ppm	0.5-5ppm
29	Plum St. & 9th St.	3	23:30	0.5	0.9	ND	--	SapphIRe	ND	ND	ND	0.5ppm	0-5ppm	0.5-5ppm
38	West Jefferson Ave. & the southern boundary of ATOFINA	3	23:35	0.06	2.42	ND	ND	SapphIRe	ND	ND	ND	0.5ppm	0-5ppm	0.5-5ppm
2	Meridian Rd. & Church Rd.	3	23:45	0	0.64	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0-5ppm	0.5-5ppm
27	Biddle Ave. & Plum St.	3	23:45	0.5	0.72	--	--	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	--	0.5-5ppm
1**	Meridian Rd. & Ferry Rd.	3	0:05	0.01	0.84	--	ND	Draeger colorimetric tubes	--	ND	ND	0.5-5ppm	0-5ppm	0.5-5ppm
28**	Quarry Rd. & Longsdorf St.	3	0:05	0.04	2.54	1.8	--	SapphIRe	ND	ND	ND	1.2ppm	0.2-3ppm	0.5-5ppm
30**	Sibley Rd. & Fort St.	3	0:15	0.45	0.88	ND	--	SapphIRe	ND	ND	ND	0-5ppm	0-5ppm	0.5-5ppm

Notes:

The symbol -- indicates no data was collected at this specific time and location using this particular instrument.
ND - Not detected. Air monitoring data were collected at this station, but elevated results were not detected.
PID - photo-ionization detector (Multi-Rae)
FID - flame-ionization detector (TVA 1000)
SO_2 - sulfur dioxide
Cl_2 - chlorine
M - methyl mercaptan

* SapphIRes were not available until 14 July 2001 at approximately 1600.
**Though these samples were taken on 15 July 2001, they are being included with Round 3 samples as they were taken shortly after midnight as part of Round 3 sampling.

TABLE 1

Air Monitoring Data Collected on 14 July 01
Rounds 1-3
ATOFINA Emergency Response
Wayne County, Michigan

Location No.	Location	Round No.	Time of Sample	PID	FID	SO_2*	SO_2 Draeger	SO_2 Monitoring Equipment	Acid Draeger	Cl_2 Draeger	M Draeger	$S0_2$ Sensitivity	Cl_2 Sensitivity	M Sensitivity
0	U.S. EPA EOC	2	16:40	0.47	0.21	--	--	Draeger colorimetric tubes	--	--	--	0-5ppm	--	--
24	West Jefferson Ave. between RR Tracks and Pennsylvania Rd.	2	16:30	0.17	2.3	--	0.2	Draeger colorimetric tubes	ND	ND	--	0-5ppm	--	--
38	West Jefferson Ave. & the southern boundary of ATOFINA	2	16:45	1.9	2.45	--	ND	Draeger colorimetric	ND	ND	ND	0-5ppm	0-5ppm	0-2ppm
16	Bridge Rd. & West Jefferson Ave.	2	17:10	--	--	1.69	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
16	Bridge Rd. & West Jefferson Ave.	2	17:10	--	--	1.56	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
16	Bridge Rd. & West Jefferson Ave.	2	17:15	--	--	--	1.56	Draeger colorimetric tubes	--	--	ND	0-5ppm	--	0-2ppm
17	West Jefferson Ave. in front of the ATOFINA Plant	2	17:20	--	--	2.23	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
40	Biddle St. & Grove St.	2	17:30	0.38	0.6	--	--	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
41	Biddle St. & Wyandotte St.	2	17:40	--	--	ND	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
49	Pennsylvania Rd. between West Jefferson Ave. & Electric St.	2	17:45	0.16	1.79	--	ND	Draeger colorimetric	ND	ND	--	0-5ppm	0-5ppm	--
18	Pennsylvania Rd. & Electric St.	2	17:50	--	--	ND	ND	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
27	Biddle Ave. & Plum St.	2	17:50	0.16	0.40	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
29	Plum St. & 9th St.	2	18:00	0.37	0.26	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
42	Sibley Rd. & Riverview St.	2	18:00	--	--	ND	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
43	753 Forrest St.	2	18:10	0.36	0.31	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
30	Sibley Rd. & Fort St.	2	18:15	--	--	ND	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
19	Pennsylvania Rd. & Conrail RR Tracks	2	18:30	0.36	0.32	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
28	Quarry Rd. & Longsdorf St.	2	18:35	--	--	ND	--	SapphIRe	--	--	ND	1.2ppm	--	0.5-5ppm
20	Pennsylvania Rd. & Quarry Rd.	2	18:50	0.38	0.29	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
23	West Jefferson Ave. & Pennsylvania Rd.	2	19:00	--	--	--	ND	Draeger colorimetric tubes	--	--	ND	1.2ppm	--	0.5-5ppm
22	West Jefferson Ave. 1,500 feet north of Sibley Rd.	2	18:30	0.13	2.01	--	ND	Draeger colorimetric tubes	ND	ND	ND	0-5ppm	0.5-5ppm	0.5-5ppm
31	Pennsylvania Rd. & Fort St.	2	19:05	0.40	0.40	--	ND	Draeger colorimetric tubes	ND	ND	ND	0.5-5ppm	0.2-3ppm	0.5-5ppm
21	West Jefferson Ave. & Ford Ave. - 100 feet south	2	19:10	0.11	2.26	--	0.2	Draeger colorimetric tubes	ND	ND	ND	0-5ppm	0-5ppm	0.5-5ppm

TABLE 6

Geographic Positioning System Readings
ATOFINA Emergency Reponse
Wayne County, Michigan

Date	Time	Location	GPS
7/17/2001	12:45	U.S. EPA EOC	42° 06.43 N 83° 09.69 W
7/17/2001	13:20	Meridian Rd. & Parke Lane Dr.	42° 11.01 N 83° 08.62 W
7/17/2001	13:25	Parke Lane Dr. & Bridge St.	42° 10.36 N 83° 08.78 W
7/17/2001	13:27	Parke Lane Dr. & Horsemill Rd.	42° 09.76 N 83° 08.49 W
7/17/2001	13:30	Horsemill Rd. & Meridian Rd.	42° 09.83 N 83° 09.47 W
7/17/2001	13:30	Sibley Rd. & Fort St.	42° 10.13 N 83° 11.31 W
7/17/2001	13:33	Bridge St. & Meridian Rd.	42° 10.27 N 83° 09.35 W
7/17/2001	13:35	Sibley Rd. & Ray St.	42° 10.23 N 83° 11.23 W
7/17/2001	13:40	Parke Lane Dr. & Church Rd.	42° 09.07 N 83° 08.57 W
7/17/2001	13:40	Sibley Rd. & Quarry Rd.	42° 10.24 N 83° 10.75 W
7/17/2001	13:42	Sibley Rd. & Riverview St.	42° 10.25 N 83° 10.26 W
7/17/2001	13:45	Sibley Rd. & West West Jefferson Ave.	42° 10.25N 83° 10.20 W
7/17/2001	13:45	Meridian Rd. & Church Rd.	42° 09.11N 83° 09.44 W
7/17/2001	13:46	Riverview St. & Conrail RR Tracks	42° 10.68 N 83° 10.12 W
7/17/2001	13:50	West River Rd. & Highland Dr.	42° 09.36 N 83° 09.78 W
7/17/2001	13:50	West Jefferson Ave. - 1,500 feet north of Sibley Rd.	42° 10.26 N 83° 10.16 W
7/17/2001	13:52	Fort St. halfway between West Jefferson Ave. & West River Rd.	42° 10.55 N 83° 10.12 W
7/17/2001	13:55	Meridian Rd. & Ferry Rd.	42° 08.30 N 83° 09.46 W
7/17/2001	13:55	Fort St. & West Jefferson Ave. - 1,000 feet south	42° 10.57 N 83° 10.05 W

TABLE 6

Geographic Positioning System Readings
ATOFINA Emergency Reponse
Wayne County, Michigan

Date	Time	Location	GPS
7/17/2001	14:00	West River Rd. & Ferry Rd.	42° 08.33 N 83° 10.14 W
7/17/2001	14:00	Bridge St. & West Jefferson Ave.	42° 09.98 N 83° 10.05 W
7/17/2001	14:02	Bridge St. & West Jefferson Ave.	42° 10.46 N 83° 09.94 W
7/17/2001	14:05	West Jefferson Ave. & 5th St.	42° 08.34 N 83° 10.96 W
7/17/2001	14:05	Tollbridge on River	42° 10.44 N 83° 09.85 W
7/17/2001	14:10	West Jefferson Ave. & West Rd.	42° 08.45 N 83° 10.67 W
7/17/2001	14:10	West Jefferson Ave. on the southern boundary of ATOFINA	42° 10.77 N 83° 09.83 W
7/17/2001	14:10	Gate Bo. 2 (across from C.P.)	42° 11.09 N 83° 09.62 W
7/17/2001	14:12	West Jefferson Ave. between Conrail RR Tracks & Pennsylvania Rd.	42° 10.97 N 83° 09.71 W
7/17/2001	14:13	West Jefferson Ave. in front of ATOFINA	42° 11.03 N 83° 09.66 W
7/17/2001	14:14	West Jefferson Ave. & Atwood St.	42° 08.77 N 83° 10.60 W
7/17/2001	14:15	Pennsylvania Rd. & West Jefferson Ave.	42° 11.11 N 83° 09.61 W
7/17/2001	14:17	Biddle Ave. & Wyandotte St.	42° 11.32 N 83° 09.44 W
7/17/2001	14:20	Biddle Ave. & Central Ave.	42° 11.3 N 83° 09.423 W
7/17/2001	14:20	West Jefferson Ave. & Harrison Ave.	42° 08.86 N 83° 10.58 W
7/17/2001	14:21	Biddle Ave. & Grove St.	42° 11.56 N 83° 09.27 W
7/17/2001	14:22	Biddle Ave. & Plum St.	42° 11.75 N 83° 09.19 W
7/17/2001	14:23	Harrison Ave. & 5th St.	42° 08.87 N 83° 10.79 W
7/17/2001	14:25	Fort St. & King Rd.	42° 09.34 N 83° 11.28 W

TABLE 6

Geographic Positioning System Readings
ATOFINA Emergency Reponse
Wayne County, Michigan

Date	Time	Location	GPS
7/17/2001	14:25	Plum St. & 9th St.	42° 11.75 N 83° 09.76 W
7/17/2001	14:27	756 Forrest St.	42° 11.61 N 83° 09.63 W
7&17&2001	14:30	King Rd. & West Jefferson Ave.	42° 09.37 N 83° 10.53 W
7/17/2001	14:30	Grove St. & 6th St.	42° 11.56 N 83° 09.43 W
7/17/2001	14:32	Grove St. & 7th St.	42° 11.56 N 83° 09.54 W
7/17/2001	14:33	Grove St. & 8th St.	42° 11.56 N 83° 09.62 W
7/17/2001	14:34	Marshall Ave. & 8th St.	42° 11.41 N 83° 09.69 W
7/17/2001	14:34	Hillsdale St. & 8th St.	42° 11.47 N 83° 09.66 W
7/17/2001	14:35	Quarry Rd. & Longsdorf St.	42° 10.59 N 83° 10.75 W
7/17/2001	14:40	Quarry Rd. & Pennsylvania Rd.	42° 11.09 N 83° 10.76 W
7/17/2001	14:40	Pennsylvania Rd. & Central Ave.	42° 11.14 N 83° 09.97 W
7/17/2001	14:41	Pennsylvania Rd. & Conrail RR Tracks	42° 11.14 N 83° 09.97 W
7/17/2001	14:43	Pennsylvania Rd. & Electric St.	42° 11.14 N 83° 09.97 W
7/17/2001	14:44	18th St. & Orchard St.	42° 11.67 N 83° 10.42 W
7/17/2001	14:45	Colvin Ave. & Electric Ave.	42° 11.81 N 83° 10.17 W
7/17/2001	14:47	Central Ave. & 8th St.	42° 11.20 N 83° 09.75 W
7/17/2001	14:48	Central Ave. & 7th St.	42° 11.30 N 83° 09.66 W
7/17/2001	14:49	Central Ave. & 6th St.	42° 11.31 N 83° 09.65 W
7/17/2001	14:50	Central Ave. & Albion St.	42° 11.40 N 83° 09.48 W

TABLE 6

Geographic Positioning System Readings
ATOFINA Emergency Reponse
Wayne County, Michigan

Date	Time	Location	GPS
7/17/2001	14:50	Fort St. & Pennsylvania Rd.	42° 11.12 N 83° 11.39 W
7/18/2001	13:23	Launch onto Detroit River near Grosse Ile	42° 11.813 N 83° 09.518 W
7/18/2001	14:47	Humbug Marsh area south end of Grosse Ile	42° 06.847 N 83° 10.912 W
7/18/2001	nd	Halfway between Humbug Marsh area and fall out zone (near Mclouth Plant)	42° 09.134 N 83° 10289 W

APPENDIX B

Figures

WESTON® MANAGERS DESIGNERS/CONSULTANTS FEDERAL PROGRAMS DIVISION	ATOFINA – ER WAYNE CO., MI	TDD #: 0107-008

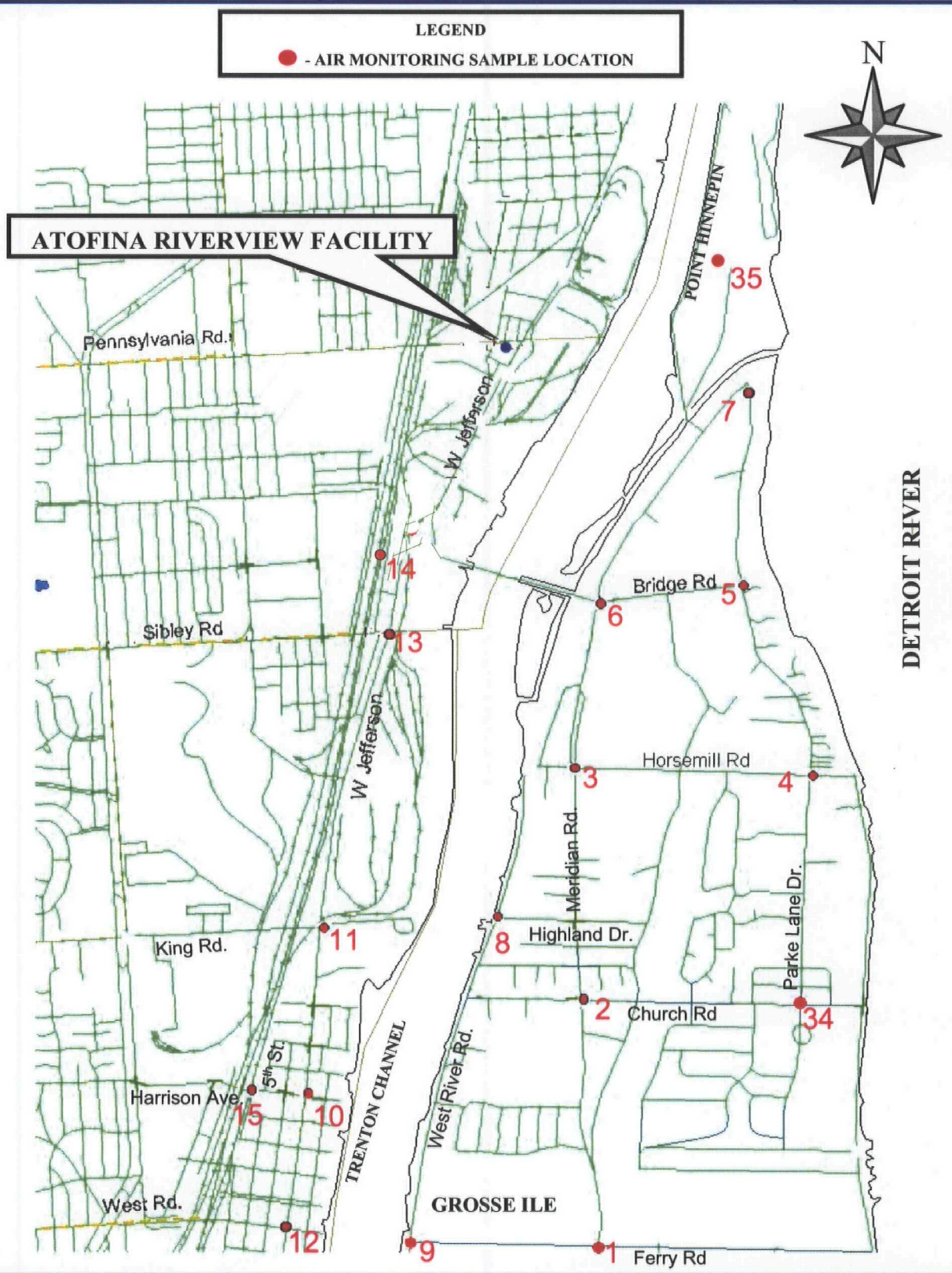


FIGURE 1

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 1 ON 14 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS FEDERAL PROGRAMS DIVISION

ATOFINA – ER
WAYNE CO., MI

TDD #: 0107-008

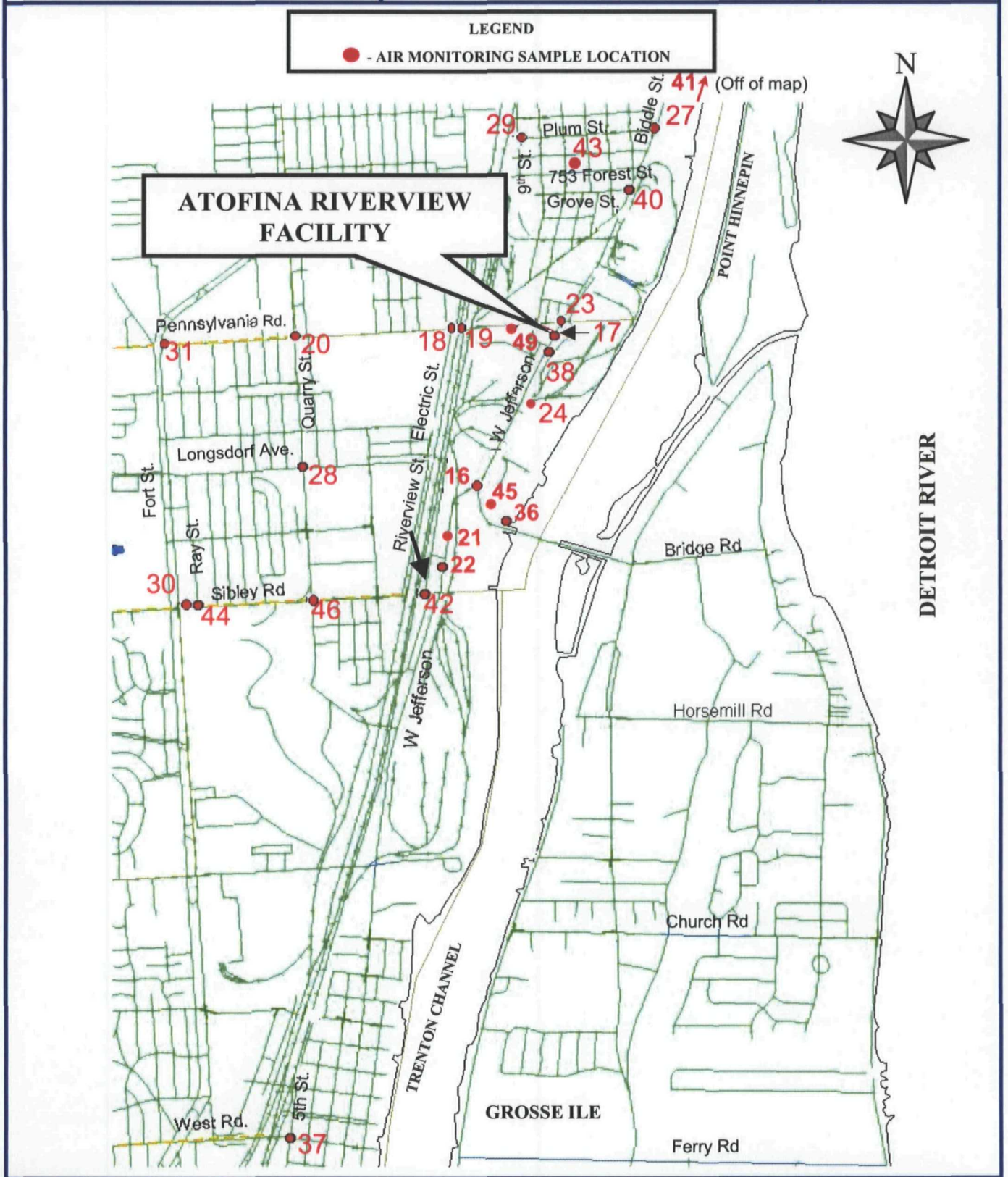


FIGURE 2

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 2 ON 14 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS — FEDERAL PROGRAMS DIVISION

ATOFINA – ER
WAYNE CO., MI

TDD #: 0107-008

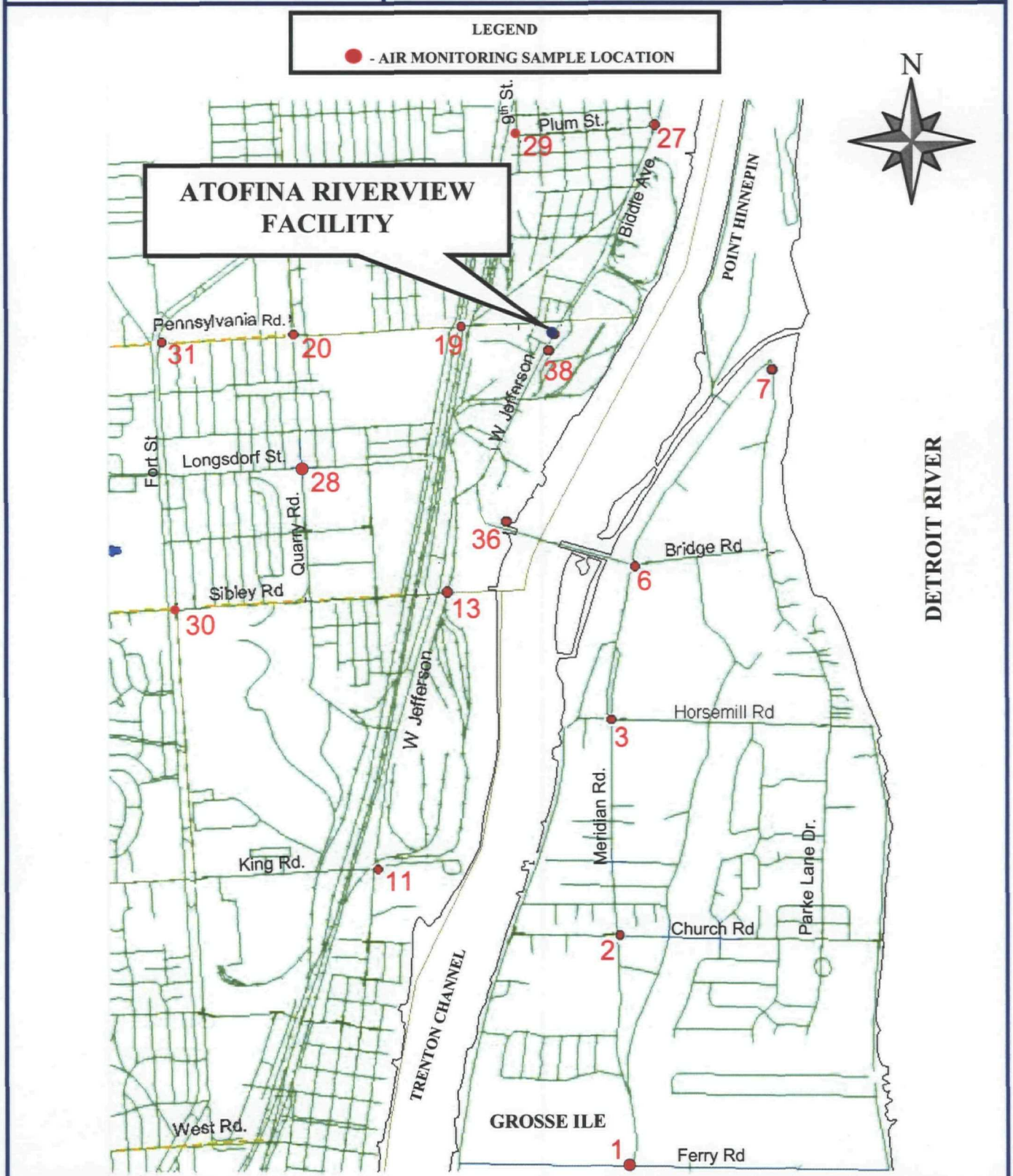


FIGURE 3

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 3 ON 14 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS — FEDERAL PROGRAMS DIVISION

ATOFINA – ER
WAYNE CO., MI

TDD#: 0107-008

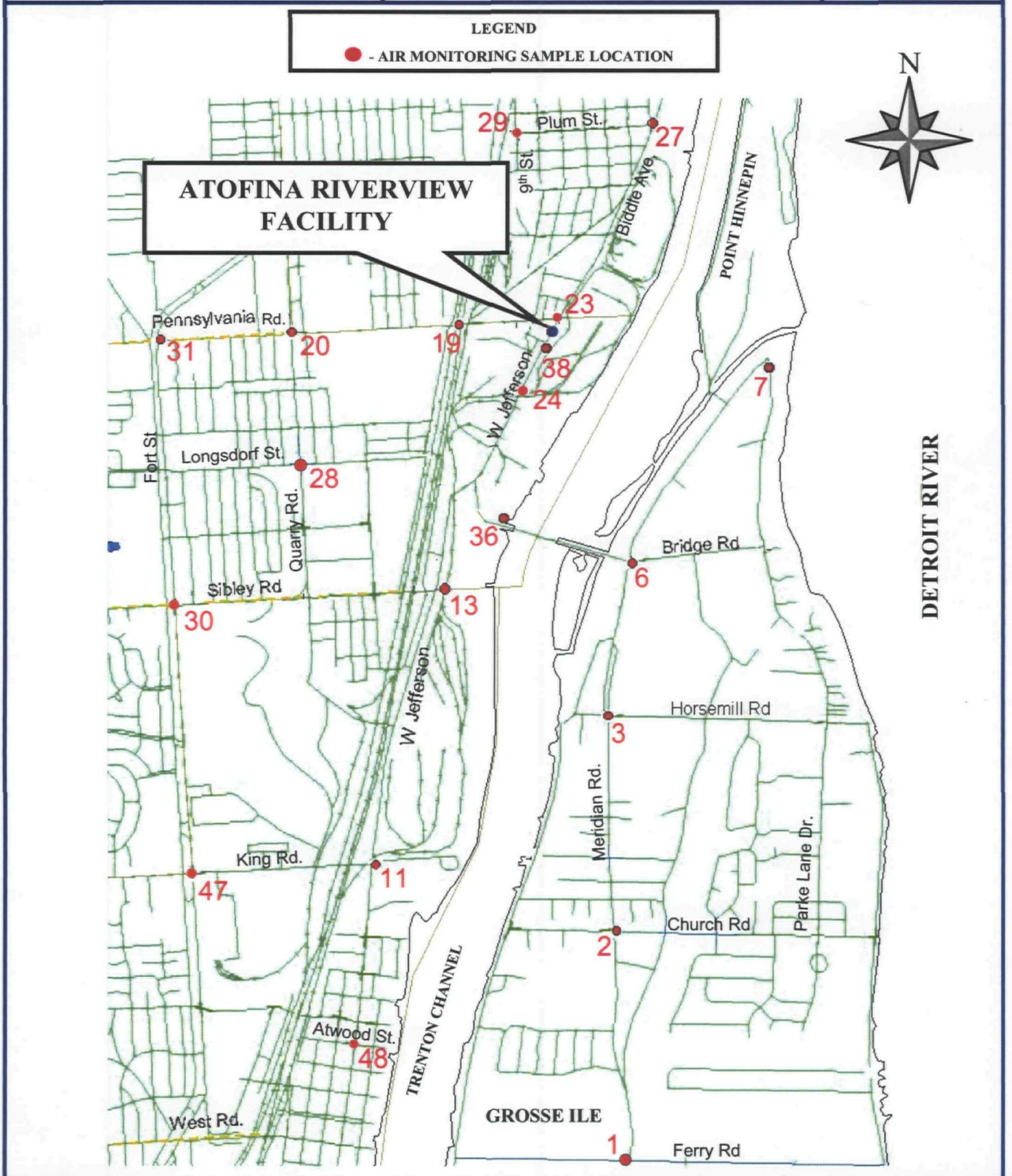


FIGURE 4

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 4 ON 15 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS — FEDERAL PROGRAMS DIVISION

ATOFINA – ER
WAYNE CO., MI

TDD#: 0107-008

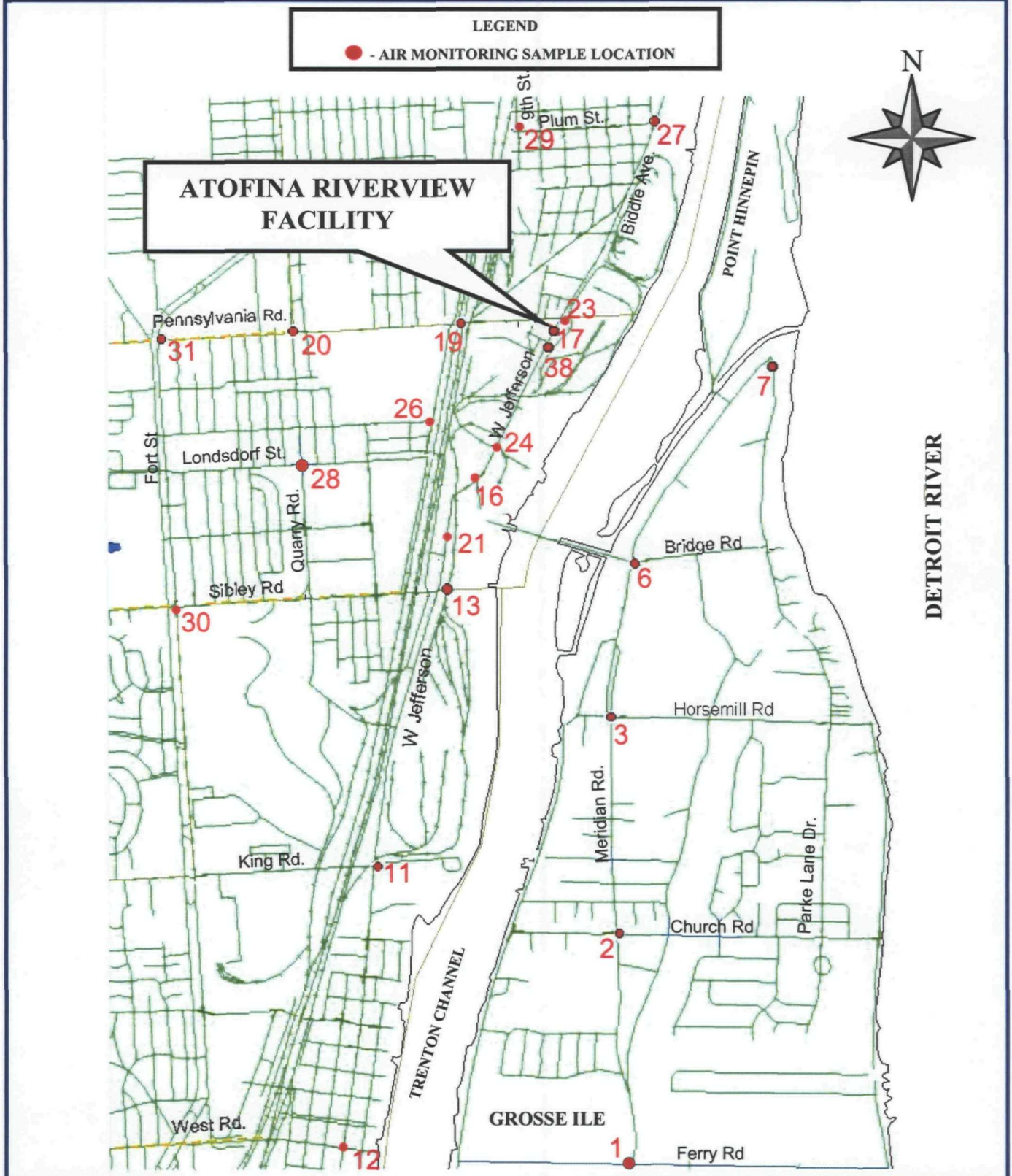


FIGURE 5

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 5 ON 15 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS FEDERAL PROGRAMS DIVISION	ATOFINA – ER WAYNE CO., MI	TDD#: 0107-008

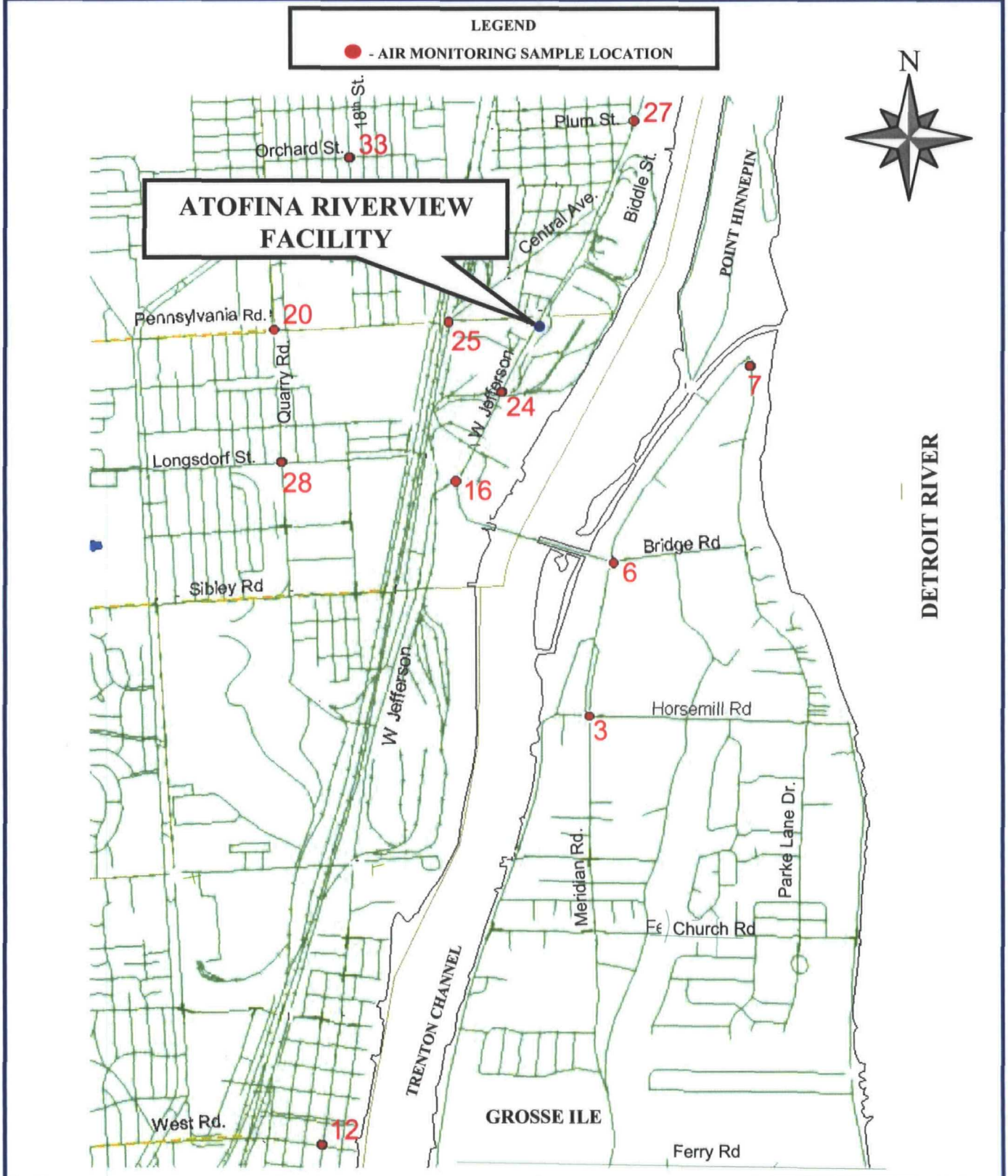


FIGURE 6

NOT TO SCALE

AIR MONITORING LOCATIONS FOR ROUND 6 ON 16 JULY 2001

WESTON® MANAGERS DESIGNERS/CONSULTANTS FEDERAL PROGRAMS DIVISION	ATOFINA – ER WAYNE CO., MI	TDD #:0107-008

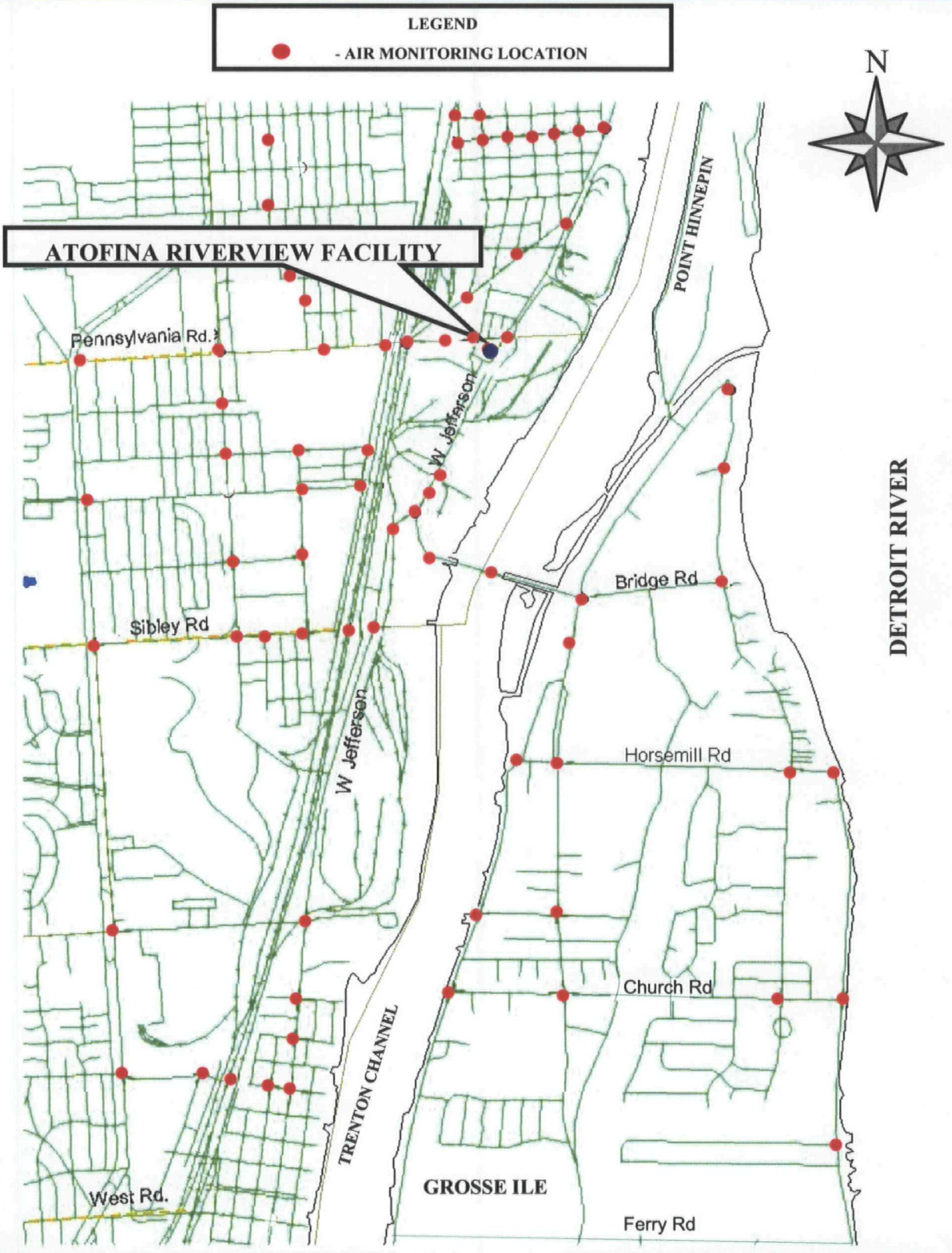


FIGURE 8

NOT TO SCALE

ERT's TAGA MOBILE LABORATORY AIR MONITORING LOCATIONS

WESTON® MANAGERS DESIGNERS/CONSULTANTS — FEDERAL PROGRAMS DIVISION

ATOFINA – ER
RIVERVIEW, WAYNE CO., MI

TDD#: 0133

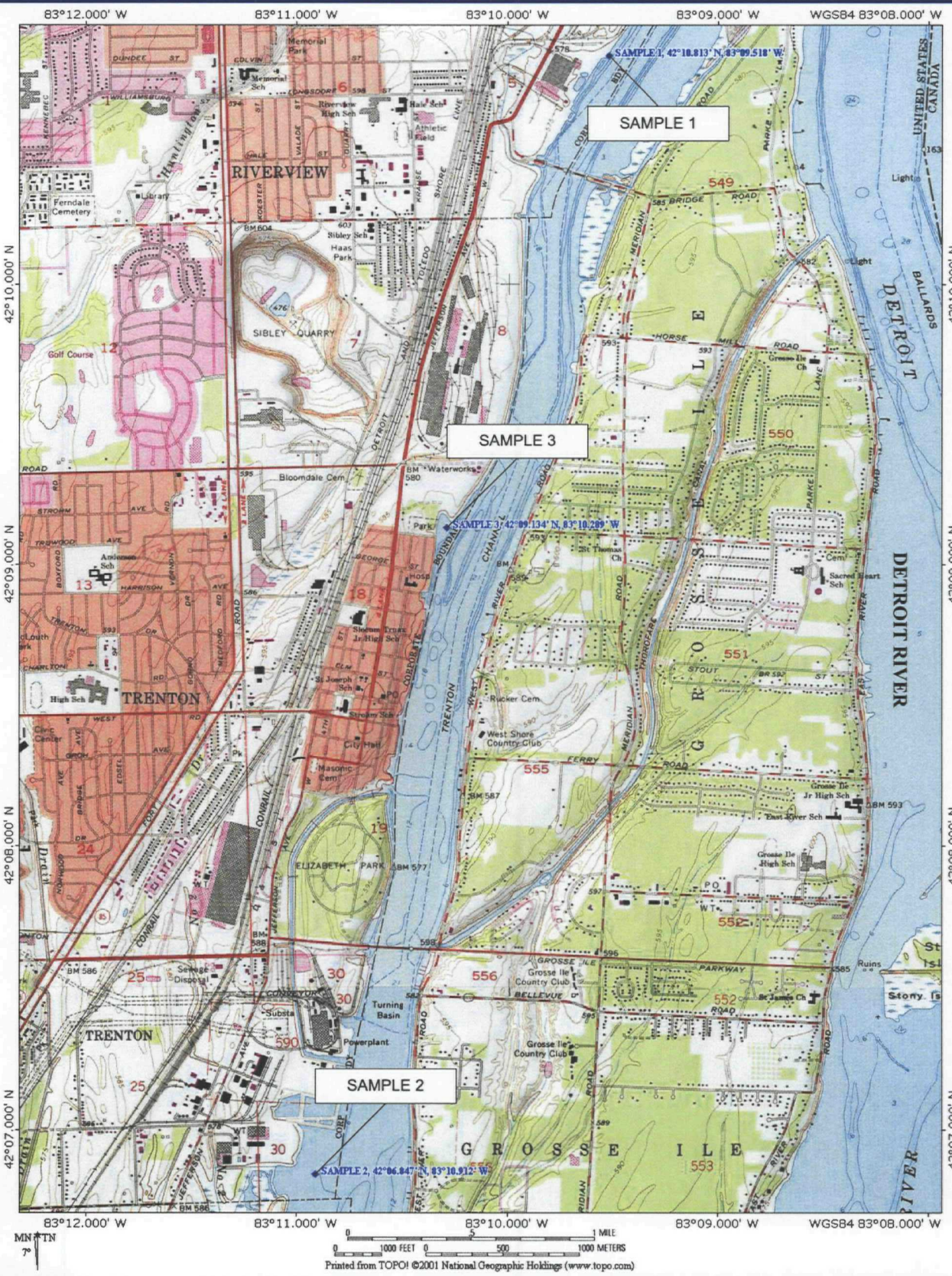


FIGURE 9

SITE LOCATION MAP - WATER SAMPLE S #1, #2, #3

APPENDIX C

Data Validation Memorandum, Laboratory Analytical Reports, and Chain-of-Custody Sheet

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-1
Work Order No:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-001A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
PH; METHOD EPA 150.1						Analyst: **JM**
pH	7.3	0		pH Units	1	07/18/2001

Hilary Watkins 8/21/01

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

Clayton GROUP SERVICES

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-1
Work Order No.:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-001B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Units	DF	Date Analyzed
MERCAPTAN, METHYL; METHOD GC/FID HEADSPACE					Analyst: **JC**
Mercaptan, Methyl	ND	1.0	mg/L	1	08/7/2001

8/21/01

Qualifiers:

- ND - Not Detected at the reporting limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximium Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quanitation range
- T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-1 DUP
Work Order No:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-002A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
PH; METHOD EPA 150.1						Analyst: **JM**
pH	8.0	0		pH Units	1	07/18/2001

8/21/01

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

Clayton GROUP SERVICES

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-1 DUP
Work Order No.:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-002B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Units	DF	Date Analyzed
MERCAPTAN, METHYL; METHOD GC/FID HEADSPACE					Analyst: JC
Mercaptan, Methyl	ND	1.0	mg/L	1	08/7/2001

8/21/01

Qualifiers:

- ND - Not Detected at the reporting limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximium Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quanitation range
- T - Tentatively Identified Compound (TIC)

Clayton GROUP SERVICES

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-2
Work Order No:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-003A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
PH; METHOD EPA 150.1						Analyst: **JM**
pH	8.4	0		pH Units	1	07/18/2001

8/21/01

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

Clayton

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-2
Work Order No.:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-003B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Units	DF	Date Analyzed
MERCAPTAN, METHYL; METHOD GC/FID HEADSPACE					Analyst: **JC**
Mercaptan, Methyl	ND	1.0	mg/L	1	08/7/2001

8/24/01

Qualifiers:

- ND - Not Detected at the reporting limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quanitation range
- T - Tentatively Identified Compound (TIC)

Clayton GROUP SERVICES

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-3
Work Order No:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-004A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
PH; METHOD EPA 150.1						Analyst: **JM**
pH	8.4	0		pH Units	1	07/18/2001

8/21/01

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

Clayton

ANALYTICAL RESULTS

Date: *09-Aug-01*

CLIENT:	ROY F. WESTON, INC.	**Client Sample ID:**	ATF-3
Work Order No.:	01070527	**Tag Number:**	
Project:		**Collection Date:**	07/18/2001
Lab ID:	01070527-004B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Units	DF	Date Analyzed
MERCAPTAN, METHYL; METHOD GC/FID HEADSPACE					Analyst: **JC**
Mercaptan, Methyl	ND	1.0	mg/L	1	08/7/2001

8/10/01

Qualifiers:

- ND - Not Detected at the reporting limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximium Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quanitation range
- T - Tentatively Identified Compound (TIC)

GC/FID QC Report for Project: 01070527

Client: ROY F. WESTON, INC.

Clayton GROUP SERVICES

Analyte	Laboratory Control Sample						Matrix Spike/Matrix Spike Duplicate			
	Blank Value mg/L	LCS Known Amount	LCS Amount (ug)	LCS % Recovery	LCSD Amount (ug)	LCSD % Recovery	Sample Number	Sample Result mg/L	Matrix Spike %Rec	Matrix Duplicate % Rec
Methyl Mercaptan GC/FID Method	<1.0	16.53	9.16	55	8.03	49	01070527-4	<1.0	90	51

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

General Chemistry QC Report for Project 01070527

Client ROY F. WESTON, INC.

Clayton GROUP SERVICES

	Laboratory Control Sample						Original/Duplicate Results				
Analyte	EPA Method	Blank Value	LCS Result	LCS known amount	LCL	UCL	Sample Number	Sample Result	Duplicate Sample Result	RPD (%)	RPD UCL
pH	9045C	---	6.03	6.00	5.95	6.05	01070527-4	8.4	8.4	<1	20

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
LCL = Lower Control Limit UCL = Upper Control Limit RPD = Relative percent Difference

Clayton GROUP SERVICES

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Rush Charges Authorized? ☐ Yes ☐ No
☐ Phone or ☐ Fax Results

Page ____ of ____

For Clayton Use Only
Clayton Lab Project No.

REPORT RESULTS TO
Name: Sabrina Genter | Client Job No.:
Company: Ray F. Weston, Inc. | Dept.:
Mailing Address: 2501 Jolly Rd.
City, State, Zip: Okemos MI 48895
Telephone No.: (517) 381-5910 | FAX No.: (517) 381-5921

SEND INVOICE TO
Purchase Order No.:
Name:
Company: | Dept.:
Address:
City, State, Zip:

Special Instructions and/or specific regulatory requirements: (method, limit of detection, etc.)

* Explanation of Preservative

Samples are: (check if applicable)
☐ Drinking Water
☒ Groundwater
☐ Wastewater

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request. Enter a 'P' if Preservative added.*)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	pH	Methlymercaptan	FOR LAB USE ONLY
ATF-1	7/18/01	13:50				X	X	
ATF-1 Dup	7/18/01	13:55				X	X	
ATF-2	7/18/01	14:30				X	X	
ATF-3	7/18/01	15:00				X	X	

LOC
Know
pH

CHAIN OF CUSTODY

Collected by: Chad Hall (print) | Collector's Signature:
Relinquished by: SabrinaGenter | Date/Time 7/18/01 | Received by: | Date/Time 7-18 5:
Relinquished by: | Date/Time | Received by: | Date/Time
Method of Shipment: | Received at Lab by: | Date/Time 7-18

Authorized by: _____ Date _____
(Client Signature MUST Accompany Request)

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain) 3.0

Please return completed form and samples to one of the Clayton Group Services, Inc. labs listed below:

Detroit Regional Lab
22345 Roethel Drive
Novi, MI 48375
(800) 806-5887
(248) 344-1770
FAX (248) 344-2655

Atlanta Regional Lab
3380 Chastain Meadows Parkway, Suite 300
Kennesaw, GA 30144
(800) 252-9919
(770) 499-7500
FAX (770) 423-4990

Seattle Regional Lab
4636 E. Marginal Way S., Suite 215
Seattle, WA 98134
(800) 568-7755
(206) 763-7364
FAX (206) 763-4189

DISTRIBUTION:
White = Clayton Laboratory
Yellow = Clayton Accounting
Pink = Client Copy

1/00 20

W.O # 12634.001.021.0133

U.S. EPA Region V START
ATOFINA Site
DATA VALIDATION

Laboratory Project #: 01070527

Methyl Mercaptan in water by method GC/FID headspace.

1.

Samples	Lab ID	Matrix	Date Collected	Date Extracted	Date Analyzed
ATF-1	001B	Water	7/18/01	NA	8/7/01
ATF-1 Dup	002B	Water	7/18/01	NA	8/7/01
ATF-2	003B	Water	7/18/01	NA	8/7/01
ATF-3	004B	Water	7/18/01	NA	8/7/01

2. **Holding Times**

In the validator's professional opinion, the samples were analyzed within the holding time.

3. **Blank**

The method blank was free of contamination.

4. **Laboratory Control Sample**

The laboratory control sample results were acceptable.

5. **Matrix Spike/Matrix Spike Duplicate**

The matrix spike/matrix spike duplicate was performed on sample ATF-3. The matrix spike/matrix spike duplicate results were acceptable.

8/21/01

22345 Roethel Drive
Novi, MI 48375
248.344.1770
Fax 248.344.2654

Clayton GROUP SERVICES

August 09, 2001

Linda Korobka
ROY F. WESTON, INC.
2501 Jolly Road
Suite 100
Okemos, MI 48864-

Clayton Work Order No. 01070527

Reference:

Dear Linda Korobka:
Clayton Group Services received 5 samples on 07/18/2001 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Karen Coonan
Client Services Representative

cc:

Clayton GROUP SERVICES

CASE NARRATIVE

Date: *09-Aug-01*

CLIENT: ROY F. WESTON, INC.

Project:

Work Order No 01070527

A Method Development Project was required to analyze Methyl Mercaptan in an aqueous matrix. The laboratory performed the following prior to analyzing any samples:

Two Laboratory Control Standards (LCS/LCSD) were analyzed by spiking Methyl mercaptan into empty 10 ml vials. The heated space was analyzed by GC/FID. This was to confirm that Methyl mercaptan could be recovered from the headspace.

A LCS and LCSD were analyzed by spiking Methyl mercaptan into 10 ml vials that contained 5 mls of Deionized (DI) water. The heated headspace was analyzed by GC/FID. This was to confirm that Methyl mercaptan could be recovered from a water matrix.

The heated headspace of one method development blank was analyzed for Methyl mercaptan by GC/FID. (5 mls of DI water in a 10 ml vial was used.)

One 10 ml vial, containing 5 mls of DI water, was spiked with Methyl mercaptan to determine the Reporting Limit. The Reporting Limit is 1.0 mg/L.

For the analytical run, 5 ml aliquots were placed in 10 ml vials. The vials were heated and the headspace analyzed by GC/FID. The following was analyzed in the run: a blank, a 5 point standard curve, another blank, the batch LCS, LCSD, samples, Matrix spike and matrix spike duplicate on sample 01070527-004B, and ending with three different levels of standards.

The Clayton Novi Laboratory is NELAP and AIHA accredited. These accreditations require we provide the following information :
Results reported progressivley higher than the reporting limit (RL) have less variability. A result reported at, or near, the RL has more variabilty.Analytical Comments for pH:Samples were analyzed using the methods outlined in the following references:

APPENDIX D

References

References

Atofina Chemicals. "Riverview: Facts about the Past and Present." 14 July 2001. <http://www.atofinachemicals.com/whatsnew/press_display.cfm?Press_ID=51>.

Mendoza, Jerry S. et al. "Explosion kills 3, disrupts Downriver" photographs. *The Detroit News*, 15 July 2001.

The Merck Index, 11th Edition. Merck & Co., Inc. 1989.

Sax, N. Irving and Richard J. Lewis, Eds. *Rapid Guide to Hazardous Chemicals in the Workplace*. New York: Van Nostrand Reinhold. 1986.

I.1
9/9/02

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
EMERGENCY RESPONSE BRANCH
9311 GROH ROAD, ROOM 216
GROSSE ILE, MI 48138-1697

REPLY TO ATTENTION OF:

To Whom It May Concern:

Enclosed please find a copy of the Summary Report for the Atofina Emergency Response. A copy of this report has been forwarded to you either as a result of a direct request you have made, or because of your interaction with the U.S. Environmental Protection Agency (U.S. EPA) during this response. This report was prepared by Roy F. Weston, a technical assistance contractor to the U.S. EPA.

The report documents the actions taken and observations made by U.S. EPA and its contractors at the fire and explosion at the Atofina Plant in Riverview, Wayne County, MI, that occurred on July 14, 2001. The report focuses primarily on U.S. EPA-directed air monitoring and sampling. In the months following the Atofina incident, the report has undergone numerous revisions in an attempt to present all of the data in a concise and clear format. Your patience with this lengthy endeavor has been appreciated.

Please be advised that this report is by no means a complete representation of the events that occurred on and after July 14, 2001, regarding this incident. U.S. EPA was only one of many agencies and organizations to respond to the scene of this emergency. This report documents only U.S. EPA's actions and observations, and is not intended to summarize the response efforts undertaken by all involved.

Please feel free to contact me directly at (734) 692-7683 with any questions or concerns regarding the enclosed report.

Sincerely,

Michelle L. Jaster

Michelle L. Jaster
U.S. EPA On-Scene Coordinator

Enclosure